

Exhibit D

DRW Trading GroupDRW Investments

Harris, Jeffrey 2015/09/02

9/2/2015 10:00 AM

Full-size Transcript

1 IN THE UNITED STATES DISTRICT COURT

2 SOUTHERN DISTRICT OF NEW YORK

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5 UNITED STATES COMMODITY)
6 FUTURES TRADING COMMISSION,)
7 Plaintiff,) Case No.
8 vs.) 13-7884 (AT/KF)
9 DONALD R. WILSON and DRW,)
10 INVESTMENTS, LLC,)
11 Defendants.)
12 - - - - -

13
14 VIDEOTAPED DEPOSITION OF JEFFREY H. HARRIS

15
16 Washington, D.C.

17 Wednesday, September 2, 2015

18 10:00 a.m.

19
20
21 Job No: 60934

22 Reported by: Karen Brynteson, RPR, RMR, CRR, FAPR

1 The deposition of JEFFREY H. HARRIS held at the
2 offices of:

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4
5 COMMODITY FUTURES TRADING COMMISSION
6 1155 21st Street, N.W.
7 Washington, D.C. 20581
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14 Pursuant to Subpoena, before Karen Brynteson,
15 Registered Professional Reporter, Registered Merit
16 Reporter, Certified Realtime Reporter, Fellow of the
17 Academy of Professional Reporters.
18
19
20
21
22

A P P E A R A N C E S

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C O N T E N T S

WITNESS: JEFFREY H. HARRIS PAGE

By Mr. Ullman 7

AFTERNOON SESSION: 130

E X H I B I T S

DEPOSITION EXHIBIT NO: PAGE

Exhibit 1 Subpoena to testify 9

Exhibit 2 Acknowledgement and Declaration
of Compliance 10

Exhibit 3 Expert Report of Jeffrey H. Harris 11

Exhibit 4 Rule 1002. IDEX 59

Exhibit 5 Excerpt of deposition of
Garry O'Connor 109

Exhibit 6 July 23, 2010 e-mail from Vander
Luitgaren to Stephenson 118

Exhibit 7 February 2, 2011 e-mail chain
from Ferber to Shay, et al 164

Exhibit 8 Wilson/Ferber Telephone
Conversation, February 4, 2011 166

Exhibit 9 Chart 189

P R O C E E D I N G S

(10:03 a.m.)

THE VIDEO OPERATOR: Here begins Disk 1
in the videotaped deposition of Jeffrey Harris taken
in the matter of the United States Commodity Futures
and Trading Commission v. Donald R. Wilson and DRW
Investments LLC, in the United States District
Court, Southern District of New York, Case Number
13-7884 (ST/KF).

Today's date is September 2nd, 2015. The
time is 10:03. This deposition is being held at
1155 21st Street, Northwest, Washington, D.C.,
20581.

The court reporter is Karen Brynteson.
The videographer is Patrick Graham. Both are
presenting on behalf of Alderson Court Reporting.

Will counsel and others please introduce
themselves and state whom they represent, beginning
with the party noticing the deposition.

MR. ULLMAN: Good morning, Dan Ullman for
Plaintiff, Commodity Futures Trading Commission.

MS. SIDDIQUI: Sophia Siddiqui on behalf

1 of the, plaintiff, Commodity Futures Trading
2 Commission.

3 MR. MAHONEY: Jason Mahoney on behalf of
4 the Plaintiff, Commodity Futures Trading
5 Commission.

6 MR. MANNING: Jason Manning of Kobre &
7 Kim LLP on behalf of Defendants Donald R. Wilson,
8 Jr., and DRW Investments LLC.

9 MR. LOURIE: Andrew Lourie of Kobre & Kim
10 on behalf of the Defendants. And also with us today
11 is Pat Levy, general counsel of DRW.

12 THE VIDEO OPERATOR: Would the court
13 reporter please administer the oath.
14 Whereupon--

15 JEFFREY H. HARRIS,
16 having been first duly sworn, was examined and
17 testified as follows:

18 EXAMINATION BY COUNSEL FOR PLAINTIFFS
19 BY MR. ULLMAN:

20 Q. Good morning, Mr. Harris. We met
21 earlier. Can you state your full name for the
22 record, please?

1 A. Yeah, my name is Jeffrey H. Harris.

2 Q. Your address?

3 A. 3941 Livingston Street, Northwest,
4 Washington, D.C.

5 Q. Have you had your deposition taken
6 before?

7 A. I have.

8 Q. Okay. On how many occasions?

9 A. Only one formal deposition.

10 Q. Okay. Was that as an expert witness?

11 A. Yes.

12 Q. Okay. And in what matter?

13 A. It was on a matter on the CFTC side. I
14 don't recall the case. It was a year and a half
15 ago.

16 Q. Okay. It happens. I am going to go over
17 a few rules about depositions for you, that
18 hopefully will expedite your day.

19 The first thing and most important thing
20 is to realize that this is being transcribed by a
21 court reporter, so we can't talk over each other.
22 Do you understand that instruction?

1 A. Yes.

2 Q. Okay. And the second instruction is that
3 you have to answer verbally because the court
4 reporter can't take down oohs, and ahhs and head
5 shrugs. Do you understand that instruction?

6 A. Yes.

7 Q. You can take a break at any time you
8 would like, but I just request that you don't take a
9 break while a question is pending. Do you
10 understand that instruction?

11 A. Yes.

12 Q. Okay. It is my job to give you a
13 question that you can understand. If you don't
14 understand it, please let me know, and I will
15 rephrase.

16 Do you understand that instruction?

17 A. Yes.

18 Q. Okay. I would like you to look at what
19 has been marked as Exhibit 1, please. Please give
20 it a look and look up when you have had a chance to
21 look at it.

22 (Deposition Exhibit Number 1 was marked for

1 identification.)

2 THE WITNESS: Okay.

3 BY MR. ULLMAN:

4 Q. Do you recognize what is marked as
5 Exhibit 1?

6 A. Yes.

7 Q. Okay. Can you just describe it for what
8 it is on the record, please?

9 A. It is the subpoena to testify in this
10 deposition today.

11 Q. Okay. And you understand you are under
12 subpoena today for your testimony?

13 A. Yes.

14 Q. Okay. Please look at what has been
15 marked as Exhibit 2.

16 (Deposition Exhibit Number 2 was marked for
17 identification.)

18 BY MR. ULLMAN:

19 Q. I take it you have seen Exhibit 2 before?

20 A. Yes.

21 Q. Okay. Can you describe what it is for
22 the record, please?

1 A. It is the admonishment for compliance for
2 me to keep everything that I have done in this case
3 confidential. I'm not sure of the formal word for
4 it.

5 Q. Okay. On page 2 there is a signature.
6 Can you just confirm that that's your signature?

7 A. Yes, it is.

8 Q. Okay. And thank you. If you could
9 please look at Exhibit 3.

10 (Deposition Exhibit Number 3 was marked for
11 identification.)

12 BY MR. ULLMAN:

13 Q. When you have had a second to look at it,
14 please describe that for the record.

15 A. So this appears to be my expert report
16 dated July 27th of this year.

17 Q. Okay. And is it a true and correct copy?

18 A. Yes, it appears to be.

19 Q. In total how many cases have you appeared
20 as an expert witness?

21 A. Appeared in what sense?

22 Q. Well, let's start with how many times

1 have you been retained as an expert witness?

2 A. So I have written, I believe,
3 approximately eight different expert reports. Some
4 of those are Court cases. Some have been -- well,
5 one was an arbitration case in front of FINRA. And
6 then one was just a dispute. It wasn't actually in
7 a court of law.

8 Q. Okay. Have you ever testified at trial
9 as an expert witness?

10 A. No.

11 Q. Okay. Have you otherwise been qualified
12 as an expert witness?

13 A. The only qualification I believe I have
14 was in the arbitration case in front of FINRA, where
15 there was a procedure where the panel had to, I
16 think, accept me as an expert in that case.

17 Q. Okay. And what was the subject of the
18 FINRA matter?

19 A. It was a derivatives case dispute about
20 residential mortgage-backed securities, credit
21 default swaps and credit default obligations.

22 Q. Did that case have anything to do with

1 futures contracts?

2 A. Only in the sense that they dealt with
3 derivatives, not futures contracts specifically.

4 Q. Mortgage-backed securities was the
5 derivative at play?

6 A. Yes.

7 Q. In terms of the eight reports you have
8 written as an expert, have any of those cases had to
9 deal with interest rate products?

10 A. No, none directly with interest rates.

11 Q. Okay. Have you ever been disqualified as
12 an expert witness?

13 A. No, not to my knowledge.

14 Q. Okay. Have your opinions ever been
15 criticized by a judge as an expert witness?

16 A. No.

17 Q. Has a motion to exclude ever been filed
18 against you in any matter that you appeared as an
19 expert witness?

20 A. Is that a Daubert exclusion or something,
21 is that what it is called?

22 Q. It can be.

1 A. Because there was one actually in the
2 case that I gave the deposition on at the CFTC.

3 Q. Okay. Do you recollect what the name of
4 that case is?

5 A. It is in my vitae, I believe.

6 Q. Okay.

7 A. Could we look it up?

8 Q. Sure. Please.

9 A. So, yeah, it is the U.S. Commodity
10 Futures Trade Commission versus Donald A. Newell and
11 Quiddity.

12 Q. Do you remember what the subject matter
13 of that matter was?

14 A. Yes. It was about trade allocations
15 where the parties were -- transaction for their own
16 account and for customers. And so there is a
17 dispute about which, which trades got allocated to
18 different accounts.

19 Q. Do you know what the result was of the
20 Daubert motion?

21 A. I don't, no.

22 Q. Do you know who Matt Evans is?

1 A. Yes.

2 Q. Okay. Who is he?

3 A. He is the other expert on, I believe, on
4 the defense side.

5 Q. Okay. And throughout the deposition I
6 don't want you to reveal or disclose any
7 conversations that happened with counsel. Do you
8 understand that?

9 A. Yes.

10 Q. Okay. So it is not my intent to ask
11 anything that you have discussed with -- with the
12 Defendants' lawyers. So just keep that in mind when
13 I am asking questions. Do you understand that?

14 A. Yes.

15 Q. Okay. Outside -- have you had any
16 conversations with Matt Evans about this case,
17 outside of counsel?

18 A. No.

19 Q. Okay. Did you review his report?

20 A. Yes.

21 Q. Okay. Did you agree with his report?

22 A. Yes.

1 Q. Did you disagree with anything in his
2 report?

3 A. I don't think I disagreed. I think I
4 would have phrased things differently.

5 Q. What things?

6 A. He made some statements about liquidity
7 and what adds liquidity, so I would have just
8 phrased some things differently, I guess.

9 Q. Well, how would you have phrased the
10 liquidity portions of Mr. Evans' report differently?

11 A. Well, my view of liquidity is much more
12 on information-based, so I have, I think, probably
13 from our backgrounds, I have more of an academic
14 background, so I look at liquidity and price
15 discovery as being sort of information-based driven.
16 And so he -- he came up with things from a different
17 angle.

18 Q. Okay. Do you have any certifications?

19 A. Professional certifications?

20 Q. Yes.

21 A. No.

22 Q. Okay. Any licensures?

1 A. No.

2 Q. Have you ever traded any financial
3 products?

4 A. No, other than buying securities.

5 Q. Okay. That would be for yourself, I take
6 it?

7 A. Yes.

8 Q. Okay. But in your professional capacity,
9 any trading of any futures products?

10 A. No.

11 Q. Okay. Any other derivatives?

12 A. No.

13 Q. Okay. If you could, flip to Exhibit 3,
14 please. And I would like you to look on, way back
15 in your report on page A-10. This is Exhibit A,
16 page 10.

17 A. Okay.

18 Q. I want to draw your attention to the last
19 quarter of the page where it talks about director.
20 Do you see that?

21 A. Yes.

22 Q. Okay. What is the Eris Exchange?

1 A. Eris Exchange is an Exchange in Chicago
2 that has products that trade interest rate
3 securities and, and markets. It is basically a
4 business startup that markets do derivatives on
5 interest rates and clears futures and swaps
6 basically through the CME Group.

7 Q. Is it a designated contract market?

8 A. I believe so, yes.

9 Q. Okay. And it says here that you are a
10 director. Is that correct?

11 A. Yes, I am on the Board of Directors.

12 Q. Okay. And that was starting in 2011; is
13 that right?

14 A. Yes.

15 Q. And as you sit here today, are you a
16 member of the Board of Directors of Eris?

17 A. Yes.

18 Q. Okay. Do you remember what month you
19 started as a director at Eris?

20 A. I don't know.

21 Q. Okay. Do you believe -- do you remember
22 it being in the first half of 2011 or the second

1 half?

2 A. No, I don't remember. No, I don't.

3 Q. Okay. What are your -- do you have
4 duties as a director of the Eris Exchange?

5 A. Yeah, I am on four different committees.
6 And then we have quarterly meetings, of course, to
7 review the operations of the -- of the Exchange.

8 Q. Okay. What committees are you on?

9 A. I am on the Nominations Committee, the
10 Exchange Practices Committee, the Exchange
11 Participants Committee, and the Regulatory Oversight
12 Committee.

13 Q. Have you been on all four committees
14 since 2011?

15 A. Yes.

16 Q. Okay. Are you compensated as a director
17 of the Eris Exchange?

18 A. Yes.

19 Q. What is your yearly compensation from the
20 Eris Exchange?

21 A. \$12,500.

22 Q. Okay. And has that been since 2011,

1 every year since 2011?

2 A. No. I think they started paying me
3 \$25,000.

4 Q. In 2011?

5 A. In 2011.

6 Q. Okay.

7 A. And I believe the first two years that
8 was the case.

9 Q. Okay.

10 A. But somewhere in between there is a
11 business startup, so the cash flows necessitated a
12 trimming, I guess, of the directors' fees.

13 Q. Okay.

14 A. Compensation.

15 Q. Okay. So just -- I want to understand
16 the sum total. The first two years you think it was
17 about \$25,000 a year?

18 A. Yes.

19 Q. And then would it be safe to, based on
20 your testimony, 2013, 2014, 2015, about \$12,500 a
21 year?

22 A. Right.

1 Q. Okay. How many hours a year do you work
2 as a director for the Eris Exchange?

3 A. Well, it has varied over the years. I
4 mean, for each quarterly meeting, I prepare probably
5 10, 12 hours.

6 Q. Okay.

7 A. We have had a disciplinary case, so we
8 had some other work to do on the side. So I would
9 guess recently about 60 to 70 hours a year.

10 Q. Okay. Has that always been the case, 60
11 to 70 hours a year?

12 A. The first year was probably more than
13 that. Being a director, I wanted to make sure that
14 I understood the products and understood sort of the
15 structure of the organization, so I probably spent
16 double that in 2011.

17 Q. Okay. And how did you become a director
18 of Eris?

19 A. So while I was chief economist here, I
20 actually met Steve Humenik, who became the chief
21 counsel, I believe, of Eris. Steve and I knew each
22 other because he worked in the -- in one of the

1 Commissioners' offices here. And we had talked
2 about, actually about some of the issues that Eris
3 is facing and some of the issues that are actually
4 in this particular case.

5 And those issues related to the prospect
6 that swaps would trade on an exchange. Since I
7 teach derivatives, I shared some experiences with my
8 teaching on how I characterized the difference
9 between a forward contract and a futures contract.

10 I think when Steve went to Eris, he
11 immediately sort of made the connection that I had
12 similar understanding or my understanding of the
13 differences between those two markets may be
14 relevant for their market. So that's how I got
15 onboard.

16 Q. Okay. I have read your report, and
17 obviously I understand you have familiarity with
18 this case. I am going to try to expedite your
19 deposition by not defining -- I will be using
20 acronyms, but to the extent you don't understand an
21 acronym, will you tell me?

22 A. Yes.

1 Q. Okay. Do you know what IDCH is?

2 A. Yes.

3 Q. Okay. Can you explain for the record
4 what IDCH is?

5 A. Well, it is an international derivative
6 clearinghouse. So it is a clearinghouse basically
7 that stands in between two futures traders, and
8 basically takes the counterparty risk from both
9 traders to trade in the marketplace and manages the
10 risk to make sure that if someone defaults, that
11 there is money enough to be paid to the
12 counterparty. And so that's basically the function
13 of a clearinghouse.

14 Q. Okay. Was IDCH -- and does IDCH
15 currently exist?

16 A. I am not sure, actually.

17 Q. Okay. Was IDCH a competitor of Eris?

18 A. Well, they are a competitor of the CME
19 Group. So Eris actually clears through the CME
20 Group process, so it is a synergistic relation,
21 where Eris runs the Exchange separately and clears
22 their product through a contractual agreement with

1 the CME Group.

2 Q. Okay.

3 A. So as a clearinghouse, I would say IDCH
4 was probably a competitor to the CME Group.

5 Q. Okay. Is the Eris Exchange a stand-alone
6 corporation?

7 A. Yeah, there is, there is Eris the
8 Exchange, and then there is an umbrella organization
9 on top of that.

10 Q. Okay. And so you are just a Board of
11 Director of the Exchange component of Eris?

12 A. Yes.

13 Q. Okay. And is that owned completely by
14 the umbrella company? Sorry, I will rephrase.

15 Is the Eris Exchange a subsidiary of this
16 Eris umbrella group?

17 A. As far as I understand, yes.

18 Q. Okay. Does Eris, the umbrella company,
19 have owners?

20 A. Other than the umbrella firm?

21 Q. I am talking about the umbrella firm.
22 Does the umbrella firm have owners?

1 MR. MANNING: Objection to form.

2 THE WITNESS: Yes.

3 BY MR. ULLMAN:

4 Q. Okay. Who are the owners of the Eris
5 umbrella company?

6 A. Well, I believe Don Wilson is the primary
7 owner.

8 Q. Okay.

9 A. I am not sure of all the other owners at
10 this stage.

11 Q. Okay.

12 A. There has been --

13 Q. Sorry, go ahead.

14 A. So there has been equity stakes made that
15 I'm not privy to or at least I haven't kept up with.

16 Q. Okay. Do you know if Mr. Wilson has been
17 an owner -- what is the name of the Eris umbrella
18 company?

19 A. I am not sure of the exact name,
20 actually. It is something like Eris. It is sort of
21 like IDCG and IDCH. It is a related name.

22 Q. For clarity's sake, I will call the

1 umbrella company -- I will refer to the umbrella
2 company as Eris and where you are a director as the
3 Eris Exchange. Does that make sense?

4 A. Sure.

5 Q. Okay. And do you know if DRW or any of
6 the DRW -- go back.

7 Do you know what DRW is?

8 A. Yes, it is a trading firm, a proprietary
9 trading firm, I believe.

10 Q. Okay. And do you know if DRW is an owner
11 of Eris?

12 A. No, I don't.

13 Q. Okay. Do you have any evidence that DRW
14 is not an owner of Eris?

15 A. I don't know how I would know that I
16 don't know something, but no.

17 Q. Okay. In other words, you just, you just
18 don't know?

19 A. Right.

20 Q. Okay. Do you know Don Wilson?

21 A. I don't know him personally. I have met
22 him once.

1 Q. Is Mr. Wilson a director of the Eris
2 Exchange?

3 A. He is.

4 Q. Okay.

5 A. I think. He is on our -- he is on our
6 Board call, so we hold our Board meetings via
7 conference call. And normally he is not on the
8 call.

9 Q. Okay.

10 A. So I guess the question is, in my mind, I
11 am not sure whether he is there as an official
12 capacity as a manager informing us or whether he
13 actually holds a directorship.

14 Q. In your capacity as a director of the
15 Eris Exchange, did you ever discuss IDCH?

16 A. No.

17 Q. Same question but in your capacity as a
18 director of the Eris Exchange, did you ever discuss
19 DRW?

20 A. I don't believe so, no.

21 Q. Do you know if there are any DRW
22 employees or officers that are on the Board of

1 Directors of the Eris Exchange?

2 A. I don't recall, actually.

3 Q. Okay.

4 A. Sorry.

5 Q. What about same question but for Eris
6 itself?

7 A. Well, so there are Eris Exchange
8 representatives that do relate during our Board
9 meeting discussions that occur for Eris, the broader
10 entity. Whether they are conveying that from the
11 Board of Directors' side or just from the
12 management, I am not particularly sure.

13 Q. Okay. Are any of those people employees
14 or officers of DRW?

15 A. Not that I know of.

16 Q. Okay. Underneath there it talks about
17 the Southern Finance Association. Do you see that?

18 A. Yes.

19 Q. What is the Southern Finance Association?

20 A. Primary an academic and practitioner
21 organization that sponsors conferences, publishes
22 journals, solicits membership, and shares research

1 information among academics and interested parties
2 in the field of finance.

3 Q. Okay. Is it safe to say it is primarily
4 an academic association?

5 A. Yeah, probably.

6 Q. Okay.

7 A. They try to broaden the umbrella, but --

8 Q. Yeah.

9 A. -- the interest in research isn't always
10 that attractive to practitioners.

11 Q. When did you leave the CFTC?

12 A. Early February of 2010.

13 Q. And why did you leave?

14 A. Well, I was on academic leave from the
15 University of Delaware, so I had applied for leave,
16 extended my leave, and my leave was up, so I had to
17 go back to teach spring of 2010.

18 Q. Okay. What is a RIX TREMA?

19 A. What was that? I didn't get that.

20 Q. R-I-X T-R-E-M-A, do you know what that
21 is?

22 A. I don't.

1 Q. Okay. Outside of -- outside of your
2 engagement in this case, have you had any business
3 dealings with, with DRW?

4 A. No.

5 Q. Okay. If you look at Exhibit 3 for a
6 minute, please. Do you recognize -- you said you
7 recognize Exhibit 3, I'm sorry, not the Exhibit 3 of
8 the report, but Exhibit 3, which is marked your
9 report.

10 A. Oh, sorry.

11 Q. Exhibit 3, do you see it?

12 A. Yes.

13 Q. Okay. And you testified earlier that
14 that's your expert report; is that right?

15 A. Yes.

16 Q. Okay. And who drafted your expert
17 report?

18 A. I did.

19 Q. Did anyone else help you?

20 A. I had assistance behind the scenes, but I
21 drafted the report.

22 Q. Okay. How were you assisted behind the

1 scenes?

2 A. I had a group of people at the Analysis
3 Group help me with formulation of the model and
4 running the optimization of the model and providing
5 data and formatting tables, putting data into charts
6 and that sort of thing.

7 Q. What is the Analysis Group?

8 A. It is a consulting firm.

9 Q. Okay. Is that where you are currently
10 employed?

11 A. No, no. So they were correlating or, you
12 know, corresponding with me to assist in my work.

13 Q. Okay. Is the Analysis Group a
14 stand-alone concern?

15 A. I believe so, yes.

16 Q. Okay. And where are they?

17 A. They have offices all over the world.

18 Q. Okay.

19 A. There is, there was one down here on like
20 Pennsylvania and 18th. I think they moved now.

21 Q. Okay.

22 A. Some of the --

1 Q. Sorry. Go ahead.

2 A. I think they are all over the world.

3 Q. Okay. And is that, the group on
4 Pennsylvania Avenue, the office on Pennsylvania
5 Avenue, is that who you interfaced with for your
6 report?

7 A. No. Actually, I guess some of the people
8 were in Montreal, if not all.

9 Q. Okay.

10 A. All of our interaction was via phone.

11 Q. Okay. And if you could, I apologize if
12 you already testified to this, what specifically did
13 they -- did they help you with on the report?

14 A. Well, specifically I directed them to do
15 the optimization, so there is a number of technical
16 operations that had to be done to try to estimate
17 prices in this case. So they coded up the actual
18 optimization program.

19 From that then they provided output and
20 then they, at my direction, put in the output into
21 the formats that we have in the -- in the tables and
22 charts and graphs that we have in the report.

1 Q. Okay. Anything else?

2 A. Well, I sent some of them on --
3 searching, sort of like an RA, a research assistant,
4 to dig up some articles for me. And then I guess
5 did get some editing feedback, say like this is a
6 typo in the report and so they helped read for, you
7 know, cosmetic and where I used the wrong verb or
8 put an "S" in for an "A" or something like that.

9 Q. What are the names of the people that
10 helped you with your report from the Analysis Group?

11 A. Eric Dufresne, Samir Warty, Michael
12 Quinn, and Anne Catherine Faye, F-a-y-e.

13 Q. And, I'm sorry, the first name, what is
14 Eric's last name?

15 A. Dufresne. It is D-u-f-r-e-s-n-e, I
16 believe.

17 Q. Again, I want to ask you a very specific
18 question about your interactions with counsel.
19 Okay? I want you to listen very specifically what I
20 am asking you for, okay? I don't want anything
21 outside of the literal meaning of the question. Do
22 you understand that?

1 A. Yes.

2 Q. Okay. Did you receive any factual
3 assumptions from the Defendants' counsel in this
4 case that made it into your report?

5 A. Factual assumptions? I don't believe so,
6 no.

7 Q. Okay. In your report you list the
8 material that you reviewed and composed in your
9 report; is that right?

10 A. Yes.

11 Q. Okay. Outside -- again, this is a
12 specific question about counsel, so please answer
13 specifically.

14 Outside of the documents or the facts and
15 data listed in your report, did you receive any
16 other facts and data from counsel that are not
17 listed in your report?

18 A. No, I believe we made sure that we had
19 everything that we referred to, that I referred to
20 in the report included in the list.

21 Q. Okay. Do you have an understanding of
22 the lawsuit that you are appearing today to testify

1 in?

2 A. Yes.

3 Q. Okay. And what is your understanding of
4 what the nature of the lawsuit is?

5 A. Well, the allegations are that DRW and
6 representatives, the firm, put in bids in the
7 settlement period to manipulate the futures price of
8 the Three Month Contract that we have referred to in
9 the report to benefit their -- you know, to make, to
10 make money on our -- creating artificial prices.

11 Q. Okay. Do you understand who the
12 Defendants are in this case?

13 A. Yes.

14 Q. And what is your understanding?

15 A. It is Don Wilson and DRW.

16 Q. Okay. I am going to refer to something
17 called the relevant period throughout the
18 deposition, and I am going to define that as January
19 2011 to August 2011.

20 Will you understand that as the relevant
21 period when I use it in your deposition?

22 A. Yes.

1 Q. Okay. Did you attend the deposition of
2 Bob MacLavery last week?

3 A. I did.

4 Q. And why did you do so?

5 MR. MANNING: Objection, to the extent it
6 calls for any privileged information.

7 MR. ULLMAN: Of course, as standing, I
8 don't want you to, if you -- maybe you can't answer
9 the question. But to the extent -- do not testify
10 about anything you have talked to with counsel.

11 BY MR. ULLMAN:

12 Q. But with that, can you -- for the record,
13 can you tell us why you attended Mr. MacLavery's
14 deposition?

15 A. Well, I thought it would be informative
16 having the economist listening to an economist, you
17 know, the expert on the other side of what he had to
18 say.

19 Q. Informative for whom?

20 A. For me.

21 Q. Okay. Did you think it was going to help
22 you with your testimony?

1 A. I don't think it -- I think it would help
2 for me to understand what he was saying and where he
3 was coming from on some of his statements.

4 Q. Okay.

5 A. To the, to the extent that helps me be
6 better informed about the case, I guess it helps me
7 with my testimony.

8 Q. Okay. We're going to go through your
9 report, but I want to ask you a few questions on the
10 top to make sure I understand the scope, to make
11 sure. Are you working any more on this case,
12 outside of the -- do you have any new opinions that
13 aren't contained in the report?

14 A. No.

15 Q. Okay. Are you currently working on any
16 other opinions relative to this case?

17 A. No.

18 Q. And am I right that you are not offering
19 any opinions about the Defendants' intent in this
20 case?

21 A. Yeah, that would be accurate, I think.

22 Q. Okay. And are you offering any opinions

1 about DRW's ability to influence market prices in
2 this matter?

3 A. Well, I believe my report looks at
4 whether there was artificial prices or not and their
5 behavior during the relevant period. I don't know
6 if I have any facts to preclude looking at their
7 ability, but I also don't think I have any facts to
8 actually confirm that they had an ability to
9 manipulate the market or to create artificial
10 prices.

11 Q. Okay. Well, we know for sure your report
12 discusses artificial price, right?

13 A. Yes.

14 MR. MANNING: Objection. I just want to
15 state, obviously the witness can answer the
16 question, but to the extent you are asking what the
17 report says, the report speaks for itself, right?

18 So you can ask him what his opinions are
19 here, but whatever answers he gives to what the
20 report says, don't control what the report actually
21 says.

22 MR. ULLMAN: Yeah, but he can summarize

1 the report, right?

2 MR. MANNING: Sure.

3 BY MR. ULLMAN:

4 Q. Okay. I am asking for a summary of your
5 report. Does your -- does your report discuss
6 artificial prices?

7 A. Yeah, it discusses DRW's bidding behavior
8 in the context of whether they created artificial
9 prices or not, yes.

10 Q. Okay. Do you have an opinion, either
11 contained in your report or not, whether DRW had the
12 ability to influence market prices of the Three
13 Month Contract?

14 A. It is an interesting question because it
15 wasn't something directly related to the ability.
16 If you ask my impression in a market where there is
17 no trading and obviously anybody with capital has
18 the ability to create artificial prices, so I would
19 agree that DRW would have the capacity to create
20 artificial prices.

21 MR. ULLMAN: Okay. Why don't we take a
22 five-minute break.

1 THE VIDEO OPERATOR: Going off the
2 record. The time is now 10:40.

3 (A recess was taken at 10:40 a.m., after which
4 the deposition resumed at 10:48 a.m.)

5 THE VIDEO OPERATOR: We are back on the
6 record. The time is now 10:48.

7 BY MR. ULLMAN:

8 Q. Mr. Harris, I want to go back and talk
9 briefly about the Analysis Group, that certain
10 members helped you with your report. Is that right?

11 A. Yes.

12 Q. Okay. Did you oversee the Analysis
13 Group's work that went into your report?

14 A. Oversee? Well, I directed it and, yeah,
15 talked to them about issues in the, in the analysis
16 that we were doing.

17 Q. Okay.

18 A. I talked to them about the data we wanted
19 to collect to do the analysis that we -- that I had
20 planned. And then, yes, so I directed them to
21 producing charts and graphs that I thought
22 illustrated what I was finding in the case.

1 Q. Okay. Did -- do you know if the Analysis
2 Group used any methodologies that you did not
3 approve of?

4 A. I believe they did what I instructed, as
5 far as the Hull-White Model and the optimization
6 technique that we programmed to actually do the
7 estimation of the prices in this case.

8 Q. Okay.

9 A. So I am confident that what I directed
10 them to do, they did.

11 Q. Okay. Do you know about -- well, you
12 referenced four people. Did you investigate their
13 qualifications before they performed these analyses?

14 A. I didn't. I had conversations with them
15 about the issues in stochastic interest rate
16 modeling.

17 Q. Okay.

18 A. And they appeared to know what they were
19 talking about.

20 Q. Okay.

21 A. I didn't get their resumes.

22 Q. Okay. And as you sit here today, you

1 don't know anything about the four people that you
2 listed before, about their qualifications?

3 A. I can't say for certain, but I believe
4 Eric has a Ph.D. and I believe Michael Quinn, he is
5 one of their senior guys, so he has got a lot of
6 experience, if not an academic degree.

7 Q. Okay. Any other qualifications that you
8 know about, as you sit here today?

9 MR. MANNING: Objection, form.

10 THE WITNESS: Are you asking me about
11 other qualifications of the individuals at the
12 Analysis Group?

13 BY MR. ULLMAN:

14 Q. Um-hum.

15 A. Other than they are employees of the
16 Analysis Group, it is a professional organization
17 that does this professionally, no.

18 Q. Okay. Why don't you turn to page 14 of
19 your report. The next series of questions are going
20 to be on paragraphs 25 through 31, so you may want
21 to give them a quick read. I have general questions
22 to begin with.

1 But why don't you look at pages 14, 15,
2 and 16 and look up when you have had a chance to
3 review them.

4 A. Okay.

5 Q. I think it would be helpful if you could
6 describe -- let's start out with, you testified
7 earlier that you are providing opinions on
8 artificial price. Can you describe for the record
9 what you understand artificial price to be?

10 A. Sure. I believe an artificial price is a
11 price that doesn't reflect supply or demand in the
12 marketplace.

13 Q. Okay. And you are using supply or demand
14 in the disjunctive; is that correct?

15 A. I am not sure what you mean there.

16 Q. Okay. So your understanding is that, am
17 I correct, that an artificial price is something
18 that doesn't reflect -- well, I don't want to put
19 words in your mouth, but -- well, correct me if I am
20 misstating your testimony.

21 But it seems like you are saying that
22 your understanding of artificial price is a price

1 that doesn't reflect legitimate sources of supply or
2 demand; is that correct?

3 A. Right. So I would say supply or demand
4 that leads to a price that is sort of not economic
5 or somehow artificial in the sense that it doesn't
6 represent value.

7 Q. Okay. Is it your understanding that a
8 legitimate price can be reached just with supply?

9 A. Yes.

10 Q. Okay. And so that's the same as your
11 understanding for just demand?

12 A. Yes.

13 Q. Okay. Does an artificial price -- can an
14 artificial price be created if -- rephrase.

15 How can a price be non-artificial if it
16 is just based on supply?

17 A. Well, any market participant that has
18 supply and wants to sell something can come up with
19 what they believe to be the appropriate price to
20 sell that. And if they are willing to put that
21 price into the marketplace being exposed to
22 executions or, you know, present that as a valid

1 price, as long as it is, you know, rationally
2 economic for them, that supply, I think, represents
3 a true price.

4 Q. And that's your -- that's your
5 understanding of what a non-artificial price is; is
6 that correct?

7 A. Yes.

8 Q. Okay. And your understanding of what
9 artificiality means permutes the report; is that
10 correct?

11 MR. MANNING: Objection, form.

12 THE WITNESS: I would say, right, the
13 underlying assumption that a bid or an offer is just
14 a quote. I mean, they could be two different prices
15 for a commodity or for any other asset.

16 Even though they are different, I don't
17 think either one could be -- is by definition,
18 artificial, but by definition one was -- represents
19 supply and the other one represents demand.

20 BY MR. ULLMAN:

21 Q. So I am asking sort of a more general
22 question. Your definition of artificiality that you

1 have -- that you have previously provided, that
2 exists and informs your entire report, to the extent
3 that you are discussing artificiality; is that
4 correct?

5 MR. MANNING: Objection, form.

6 THE WITNESS: Yeah. I think any price
7 that is produced with economic rationality behind
8 it, I think by definition is not artificial.

9 BY MR. ULLMAN:

10 Q. Okay. I want you to flip back a few
11 pages to page 9, please. Starting in Roman numeral
12 VI. Before we get to that other section, if you
13 could just look at paragraph -- paragraphs 17, 18,
14 and 19.

15 A. Okay.

16 Q. Can you just look at that? As you sit
17 here today, you still agree with that definition,
18 the definitions contained in, in paragraph 17; is
19 that correct?

20 A. Yes.

21 Q. Can you explain for the record what
22 variation margin is?

1 A. Variation margin is the cash flows
2 exchanged at the end of a day, facilitated by the
3 clearinghouse to make sure that the clearinghouse
4 minimizes the risk and accurately prices the
5 contract that changes in value in that day.

6 Q. Okay. And is variation margin important?

7 A. Yes.

8 Q. Okay. These are basic questions, but we
9 need it for the record. Why is it important?

10 A. Well, variation margin and any margin is
11 a performance bond. So the clearinghouse wants to
12 make sure there is no default on either side of the
13 transaction, since the -- technically the
14 counterparty to all transactions, and so the
15 clearinghouse faces some risk if, if the margin is
16 depleted or if the margin somehow -- the entity on
17 one side of the trade goes bankrupt, presents some
18 risk for the clearinghouse.

19 Q. Okay. And do you know what the phrase
20 marked-to-market means?

21 A. Yes.

22 Q. Okay. And just for the record, can you

1 explain what that means?

2 A. So typically an exchange traded product,
3 those products are marked-to-market each day in the
4 sense that there is a settlement price or some price
5 determined at the end of the trading day, in which
6 the clearinghouse marks that particular contract or
7 security to the market price for that day.

8 And so that dictates, again, the cash
9 flows that are made for that day. It is a formal
10 procedure that the clearinghouse goes through to
11 actually determine and to balance out the risk of
12 their -- what they are counterparty to, you know.

13 Q. Okay. You obviously spent some time with
14 the Three Month Contract and you have described the
15 Three Month Contract in your report. Is that right?

16 A. Yes.

17 Q. And is it your understanding that at the
18 end of each day various tenors of the Three Month
19 Contract were marked-to-market?

20 A. Yes.

21 Q. Okay. And is it your understanding that
22 based on that marking, that variation margin was

1 paid to IDCH or received from IDCH every day?

2 A. Yes.

3 Q. Okay. Have you looked at the rule --
4 well, let's back up for a second.

5 Do you have an understanding of how the
6 Three Month Contract was listed?

7 A. Listed as far as what, Exchange listed?

8 Q. Yeah. To start with, do you know what
9 Exchange listed the product?

10 A. Yeah, it was the Philadelphia Board of
11 Trade, NDX, I guess.

12 Q. Yeah.

13 A. What it is called now.

14 Q. NFX?

15 A. NFX, there we go, National Futures.

16 Q. And do you have an understanding about on
17 an average trading day, how many Three Month
18 Contracts were listed by IDCH on NFX?

19 A. How many were listed on a day? Well,
20 there is tenors that are main, sort of like one
21 year, three year, five, seven, 10, 20, 25, 30. So
22 there was along the curve at different tenors, ten

1 or so.

2 Q. Okay. Do you understand -- sorry, I
3 interrupted you. Keep going.

4 A. I think that suffices.

5 Q. And you understand those individual
6 tenors as being futures contracts, right?

7 A. Right.

8 Q. Okay. Have you looked at IDCH's rules
9 about valuing open positions in the Three Month
10 Contract?

11 A. Well, the Exchange doesn't necessarily
12 value open positions.

13 Q. Okay.

14 A. When they set settlement prices, is that
15 what you mean?

16 Q. Well, I guess I mean actually valuation
17 of open positions. And maybe I should limit it
18 to -- to NFX.

19 Have you looked at IDCH's rules about
20 valuing open positions in the Three Month Contract?

21 A. Well, I believe the only time they would
22 be concerned about valuation is at settlement at the

1 end of the day.

2 Q. Okay. Have you looked at those rules?

3 A. Yes.

4 Q. Okay, okay. And what is your
5 understanding of how a party's open position was
6 valued by IDCH?

7 A. Well, you would take the notional value
8 and you would have some settlement price, so the
9 settlement price would, you know, depending on the
10 size of your position, in the settlement price that
11 was established, that would establish the value of
12 your open position.

13 Q. Okay. And do you know whether IDCH used
14 any type of curve methodology to figure out the
15 value of the open position?

16 A. Well, what they -- from what I
17 understand, they valued each one of the individual
18 tenors, and that would create a curve. So if you
19 would connect the dots along the spectrum of term
20 structure, then you would get a curve or a line or
21 whatever it amounted to.

22 But that would, that would be the result

1 of valuating each individual day's tenor.

2 Q. Of that day's tenor?

3 A. Of that day's, right.

4 Q. So maybe you can walk me through this.

5 Your report indicates that DRW had, during the
6 relevant period, open positions in the Three Month
7 Contract?

8 A. Yes.

9 Q. Okay. And I take it from your testimony
10 in your report that you understand that those were
11 valued on every trading day, marked-to-market at the
12 end of the trading day; is that correct?

13 A. Yes.

14 Q. Okay. And so because this is an interest
15 rate product, right, and some of their positions
16 were open during the relevant period for five or six
17 months; does that sound right?

18 A. Yeah. I mean, I think they had positions
19 open for longer than that.

20 Q. Okay. Do you know when they established
21 their long positions in the Three Month Contract?

22 A. Sometime in late 2010.

1 Q. Okay.

2 A. They at least had one trade in the Three
3 Month Contract.

4 Q. Okay. Do you know how DRW obtained its
5 open positions in the Three Month Contract?

6 A. I think through the voice broker. They
7 had -- they had a trade with Jeffries, I believe,
8 that opened up a long position in the Three Month
9 Contract.

10 Q. Okay. Do you know how many open
11 positions they had, let's say starting January 24th,
12 2011?

13 A. No, I don't.

14 Q. Okay. Did you investigate that at all in
15 drafting your report?

16 A. I didn't look into the details of what
17 their open positions were, other than knowing that
18 they were long in the contract.

19 Q. Okay. So I am not trying to quiz you on
20 your knowledge. I just want to make sure we -- that
21 we're on the same page on this.

22 What is your understanding how DRW's open

1 long positions, say in February, were -- the value
2 of those positions were determined on an average --
3 on any trading day?

4 A. Well, the value would just be the open
5 interest that they had multiplied by whatever --
6 well, it is -- if you look at the -- are you marking
7 this to their book or are they looking at the value
8 to them as far as getting in and out or --

9 Q. Well, I guess I am asking you. So I
10 think you've -- you have testified about what
11 variation margin is. Your report discusses
12 variation margin.

13 And I think you aptly described that
14 variation margin is important or is an important
15 concept in terms of the financial integrity of a
16 clearinghouse.

17 Is that a fair summary of your testimony?

18 A. Yes.

19 Q. And so you also testified that a
20 clearinghouse sits in between these positions, both
21 sides, right? So it is the long to the open short
22 position; and the short to the open long position;

1 is that a fair way to describe it?

2 A. Yes.

3 Q. Okay. So you also testified that your
4 understanding is that DRW had open positions during
5 the relevant period?

6 A. Yes.

7 Q. And that they were long, right? And I am
8 asking you what is your understanding of how IDCH
9 was valuing your position on a daily basis to
10 determine the amount of variation margin either
11 received or provided to the clearinghouse?

12 A. Well, that's -- I think that's a little
13 different than I understood.

14 Q. Okay. Good.

15 A. I mean, I don't think they value it.
16 What they look at is the change in price for that
17 day. And they want to have -- make sure that if the
18 price has moved against any individual entity, that
19 they collect the margins appropriate in the
20 variation margin.

21 Q. Okay.

22 A. So -- but the variation margin doesn't

1 represent necessarily the value of the position. It
2 is just -- it is a risk management technique for the
3 clearinghouse, again.

4 Q. Okay. So I don't want to put words in
5 your mouth, but do you believe that the value of
6 DRW's open positions were evaluated every trading
7 day by IDCH?

8 MR. MANNING: Objection, form.

9 THE WITNESS: Well, I guess to the extent
10 that the size of their position mattered for the
11 margin that they had up and down, I don't think that
12 would be -- the valuation of those positions, I
13 don't think, would be central focus, again, of the
14 clearinghouse; the clearinghouse being more
15 concerned with what the change in value was that
16 day.

17 BY MR. ULLMAN:

18 Q. Okay.

19 A. So I guess behind the scenes they have to
20 have some notion of the value, right, because you
21 have to have margin posted. And if you have a
22 bigger position, you have to post bigger margins.

1 So in that regard it is true, but I don't
2 -- I am not aware of a clearinghouse actually
3 calculating the value of open positions for the
4 participants of the market.

5 Q. Okay. All right.

6 So I guess the answer is you don't know?

7 A. I don't know what?

8 Q. Well, I am asking you whether you, you
9 believe or do you have any knowledge about whether
10 IDCH was evaluating the value of DRW's open
11 positions at the end of every trading day?

12 A. Well, I am not aware of the technique
13 they would go through to actually value that. I
14 mean, I am not quite sure what the question is, I
15 guess.

16 Q. Okay.

17 A. Again, I think the focus of a
18 clearinghouse is again to -- on a variation margin
19 basis, is to make sure that the price movements of
20 that day were reflected in the variation margin
21 panes.

22 And behind the scenes, again, there is

1 some value or some valuation of original -- what
2 size of the positions matter, but I am not aware of,
3 you know, someone at the clearinghouse itself
4 sitting down and calculating out the total value
5 every day.

6 Q. Okay. In paragraph 17 you talk about
7 cash flows. Do you see that?

8 A. Yes.

9 Q. Even though this section deals with
10 interest rate swaps, is that your understanding of,
11 of how the flows associated with open positions in
12 the Three Month Contract?

13 A. Yeah, the Three Month Contract, the
14 futures contract is meant to mirror the cash flows
15 that would be exchanged in a swap contract.

16 Q. Okay.

17 A. Although is not cleared.

18 Q. Okay. And if you look at paragraph 20,
19 you delineate that. And do you understand what it
20 means to be long in the Three Month Contract in
21 terms of cash flows?

22 A. Yes.

1 Q. And what does that mean?

2 A. So if you are long with the Three Month
3 Contract, that means you are the fixed rate payer.

4 Q. Okay. And what happens -- how do you
5 benefit in that position?

6 A. So since you are the fixed rate payer,
7 interest rates go up, you received higher variable
8 rates, so that is a benefit for you. So long
9 benefits when rates go up; and short benefits when
10 rates go down.

11 Q. Okay. And by definition, for the short,
12 the opposite is true; is that correct?

13 A. Right.

14 Q. Okay. I am marking this as Number 4,
15 please.

16 (Deposition Exhibit Number 4 was marked for
17 identification.)

18 BY MR. ULLMAN:

19 Q. Just to direct your attention, for the
20 record, this is an excerpt from the -- from the
21 Three Month Contract Rule Book. I am mostly
22 interested in what is on page 100 of Exhibit 4,

1 which is the daily settlement price paragraph.

2 Please take a second to look at it, and
3 then I have a few questions about that for you.

4 A. Okay.

5 Q. Do you see in your report page 14, if you
6 keep both documents open please, and on page 14 it
7 looks like you cite the specific rule. Is that a
8 correct understanding?

9 A. Yes.

10 Q. Okay. In footnotes 29 and 30. Okay.
11 In paragraph (i) on page 100 of
12 Exhibit 4, is that your understanding of how IDCH
13 calculated the value of open positions in the Three
14 Month Contract?

15 A. Yes, it is right from their rule book.

16 Q. Okay. Now, in paragraph (i), am I right
17 that there is no reference to variation margin
18 proceeds as being one of the price flows that was
19 used to determine the open position valuation on the
20 Three Month Contract?

21 A. Repeat the question again? I'm sorry.

22 MR. ULLMAN: Could you read it back,

1 please?

2 THE REPORTER: "Question: Now, in
3 paragraph (i), am I right that there is no reference
4 to variation margin proceeds as being one of the
5 price flows that was used to determine the open
6 position valuation on the Three Month Contract?"

7 THE WITNESS: Yes.

8 BY MR. ULLMAN:

9 Q. Going to page 14 of your report, let's
10 first discuss the relationship between a
11 clearinghouse and an Exchange as you understand it.
12 Can you describe that for the record, please?

13 A. Yes. So typically the Exchange is
14 interested in the rules that govern trading and
15 dissemination of information on the Exchange. And
16 typically -- well, in a large number of cases, the
17 Exchanges run their own clearinghouse, because they
18 are uniquely positioned to know who is trading and
19 have some estimate of who is a good credit risk and
20 who is not.

21 So the clearinghouse sometimes is
22 interchangeable with the Exchange, but in

1 technicality, they are a little bit different
2 because the clearinghouse, you know, is meant to
3 manage the risk of the positions and the Exchange
4 maybe has a dichotomous role of trying to get more
5 trading done.

6 So it is perhaps a little tension there
7 between the Exchange, who wants a lot of the
8 trading, and the clearinghouse that wants to make
9 sure that the participants are fully vetted and
10 properly, you know, good risk, actually, for
11 counterparties.

12 Q. Um-hum. And in the example when
13 clearinghouses and exchanges are operated by the
14 same entity -- well, let's back up for a second.

15 Clearinghouses are referred to as
16 designated -- hold on a second.

17 Do you know what the efficiency of CFTC
18 registrant classification is for clearinghouses?

19 A. I am not sure of the acronym at this
20 stage, no. We had a whole division, the DCIO, when
21 I was here, was for the Division of Clearing and
22 Intermediate Oversight. So that entity was

1 regulated separately in the market.

2 Q. Okay. And Exchanges design contracts,
3 correct?

4 A. Right.

5 Q. Okay. And, you know, let's take CME as
6 an example. CME designs new contracts all the time,
7 right?

8 A. Yeah, but there is a huge failure rate in
9 trying to launch new contracts that have buyers and
10 sellers that want to trade.

11 Q. It is -- yeah. And the Exchange and the
12 clearinghouse design contracts with various
13 characteristics; is that fair?

14 A. Yes.

15 Q. And that, that a specific type of
16 contract designed by an Exchange and a clearinghouse
17 could be vastly different from -- from Exchange and
18 clearinghouse A and Exchange and clearinghouse B's
19 contract, even if it is the same underlying, we will
20 say, commodity, right?

21 A. Right. I think this is a good example of
22 that. There is a number of interest rate contracts

1 that are sensitive to interest rates with different
2 contract features, yes.

3 Q. Yeah. And they have different, different
4 characteristics from each other, we will say, in the
5 interest rates or futures contract realm, right?

6 A. Yes.

7 Q. Okay. And, and that can lead to the
8 success or failure of a futures contract?

9 A. Yes.

10 Q. Okay. And that can lead to pricing
11 differentials in futures contracts?

12 A. Yes.

13 Q. Okay. And that stems from -- let me
14 rephrase.

15 The pricing of a contract stems from the
16 actual creation of the characteristics of the
17 futures contract, at least in part. Do you agree
18 with that statement?

19 MR. MANNING: Objection, form.

20 THE WITNESS: Yeah, certainly. I mean,
21 there is never a futures contracts, for instance,
22 with different delivery points. You are going to

1 get different prices for those, depending on where
2 the futures or commodity or underlying might be
3 delivered, right.

4 BY MR. ULLMAN:

5 Q. And there are different futures contracts
6 with -- the most obvious reason would be the
7 quantity of delivery, right, like one futures
8 contract would have, you know, a million barrels and
9 one has 100,000 barrels, that would result in
10 pricing distinctions?

11 A. Yeah. I mean, there is e-mini futures
12 and all sorts of different variations of sizes,
13 right.

14 Q. Okay.

15 A. We did a paper on that looking at the
16 wheat market, and the fact that you didn't
17 necessarily get wheat, you got a certificate in
18 delivery.

19 Q. In Roman numeral VII on page 14, as the
20 header you write, "the value of the Three Month
21 Contract differs from an OTC interest rate swap due
22 to the exchange of variation margins but IDC chose

1 not to account for this when it designed the Three
2 Month Contract."

3 Do you see that?

4 A. Yes.

5 Q. And do you agree with that statement as
6 you sit here today?

7 A. Yes.

8 Q. First of all, what do you mean by the
9 word "value," the value of the Three Month Contract?

10 A. Well, in this context I would say what I
11 had in mind was the value of the Three Month
12 Contract was whatever the price would be if someone
13 wanted to enter into that contract at any point in
14 time, looking at the remaining life of a contract.

15 Q. Okay.

16 A. So what, you know, contract
17 specifications, time horizon and all the other
18 specifications.

19 Q. Okay. So, say a party puts a bid in on
20 the Three Month Contract. Is that -- would that fit
21 into your definition of what the value of the Three
22 Month Contract is in this header?

1 A. Well, if a party is putting in a bid,
2 presumably they have had -- they've come up with
3 some valuation. And so that would, that would
4 qualify as value, yes.

5 Q. Okay. But I guess what I am trying to
6 figure out is what you mean by the value of the
7 Three Month Contract in this header, differs from
8 the OTC rate, okay.

9 So are you talking generally the value or
10 what -- what do you mean by that?

11 A. Yeah, I think generally the value of a
12 Three Month Contract, the one we have here that has
13 the variation margin exchange at the end of the day,
14 generally differs from an OTC interest rate swap,
15 yes.

16 Q. Okay. And, and what is your measurement
17 of, of value?

18 A. Well, I tried to get at that in my
19 report. There is, I think, two components of what
20 the value -- the difference in the value anyway
21 between these two contracts. One is the NPV effect,
22 and the other one is convexity effect.

1 Q. And did you do an analysis of the closing
2 prices of the Three Month Contract when you were
3 drafting your report?

4 A. No, I did an analysis of what I believed
5 the Three Month Contract would be worth and then
6 made some comparisons to what the closing prices
7 were.

8 Q. Okay. So you did look at closing, the
9 actual closing prices of the --

10 A. Yes.

11 Q. -- of the --

12 A. Yes.

13 Q. And you said that there are, there are
14 two dynamics that you believe create this difference
15 in price between the Three Month Contract and the
16 over-the-counter swap. Is that right?

17 A. Yes.

18 Q. Okay. And are you aware that there is a
19 period of time before the relevant period, January
20 2011, where DRW was placing voice bids?

21 A. Yes, I understand that they produced
22 voice bids through the relevant period as well.

1 Q. Okay. But let's just talk about the
2 period. Let's talk about September, October,
3 November, and December of 2010. Okay?

4 A. Okay.

5 Q. During that period are you aware that DRW
6 was placing voice bids on the Three Month Contract?

7 A. I presume they were because they actually
8 consummated a trade during that period, yes.

9 Q. Okay. And I believe the report says
10 this, but correct me if I am wrong, it is your
11 understanding that during that period in late 2010,
12 that the Three Month Contract settlement price was
13 the OTC price. Is that your understanding?

14 A. Yeah, my understanding is there was no
15 activity on the Exchange, so they defaulted to the
16 OTC price.

17 Q. Okay. And so am I right that a party's
18 open position, this is in October -- let's say
19 September through December 2010, a party's -- DRW's
20 open long position was affected by interest rate
21 changes; is that correct?

22 A. Yes.

1 Q. Okay. And because it is a futures
2 contract, variation margin was exchanged to the
3 clearinghouse during this period; is that right?

4 A. Yes.

5 Q. Okay. And so this valuation difference,
6 when did you first observe that in terms of closing
7 prices relative to the Three Month Contract?

8 MR. MANNING: Objection, form.

9 THE WITNESS: So I didn't go back into
10 2010 and estimate closing prices, but if I would
11 have, it would have been observed in 2010. The
12 closing prices I have seen appear to have not have
13 reflected those two components, given that the logic
14 that if they defaulted to OT swap rates, then the
15 OTC swap rate didn't include those two components.

16 BY MR. ULLMAN:

17 Q. Okay. So when you talk about these two
18 factors that you considered to be difference in
19 valuation, you are not necessarily talking about
20 pricing valuation; am I correct?

21 A. I don't know how to interpret that
22 question.

1 Q. Okay. Your report talks about the NPV
2 effect and the convexity effect, correct?

3 A. Yes.

4 Q. And you, tell me if I am misstating, but
5 my read of your report is that you are saying that
6 these are inherent characteristics to all interest
7 rate contracts that affect their valuation vis-a-vis
8 OTC contracts. Is that fair?

9 A. That's right.

10 MR. MANNING: Objection. You can answer.

11 THE WITNESS: Yeah, I think given the
12 interest rate environment we have.

13 BY MR. ULLMAN:

14 Q. Okay.

15 A. So the NPV effect depends on an upward
16 sloping yield curve, and the convexity effect
17 depends on volatility of interest rates.

18 Q. But both the NPV effect and the convexity
19 effect as explained in your reports relate to
20 variation margin, right?

21 A. Well, the NPV effect, yeah, yeah,
22 basically.

1 Q. Okay. And you testified earlier that
2 there is a period of time when DRW was placing voice
3 bids in 2010 where variation margin was being
4 exchanged between the open positions and the
5 clearinghouse?

6 A. Yes.

7 Q. Okay. But there wasn't any pricing
8 difference that was being priced to the OTC contract
9 during that period; is that -- is that your
10 understanding?

11 A. Yeah.

12 Q. Okay. So there wasn't any resulting
13 valuation difference based on variation margin
14 between September and December of 2010?

15 A. No, I think there was, actually. Because
16 as long as you have prices going up, the long party
17 benefits; and prices going down, the short party
18 benefits. And the convexity effect only depends
19 upon that.

20 So even the variation margin that would
21 be exchanged in 2010 would, would create value for
22 the long side that exceeded the value for the short

1 side.

2 Q. Can you point to a single price between
3 September and December 2010 that reflected
4 differences in pricing based on the convexity
5 effect?

6 A. Well, I am not sure what you mean by
7 price. If the, if the value of the contract -- if
8 the interest rates went up, the long party got cash
9 flow in. So that long party got some value because
10 when -- if interest rates go back down, they had to
11 put variation margin back in.

12 But if you look at it in terms of say
13 just a simple example, so if interest rates go up,
14 that gave a cash flow into the long party. That
15 long party could make an investment, even if it is
16 an overnight investment. If interest rates went
17 down the next day, they could sell that investment
18 and reap the benefit.

19 So that generates value to the long party
20 in the cleared swap or -- yeah, in the cleared
21 account that has these variation margins.

22 Q. Yeah, but I guess I am reading -- I read

1 your report a little bit differently than that. And
2 maybe that is my mistake. But what you are
3 describing is, is discussing how the winning party
4 gets to use funds on -- based on variation margin
5 overnight, right?

6 And what I think you have testified to in
7 your report says that this dynamic creates valuation
8 differences for the contract itself, not, not a
9 benefit to the winning party or the long position
10 that would potentially be able to invest it at a
11 higher rate overnight vis-a-vis the short, right,
12 but what you seem to -- what I understand your
13 report is saying is that both the NPV effect and the
14 convexity effect create inherent pricing
15 differences.

16 Am I misunderstanding your report?

17 MR. MANNING: Objection.

18 THE WITNESS: To the extent that price
19 reflects value, yes, it would have pricing
20 differences.

21 BY MR. ULLMAN:

22 Q. Okay. But -- but variation margin,

1 again, was transferred between October and December
2 of, of 2011?

3 A. Right.

4 Q. Okay. But there wasn't any price
5 difference in the contract in the Three Month
6 Contract?

7 MR. MANNING: Objection. Just to be
8 clear, you said October, December, 2011.

9 BY MR. ULLMAN:

10 Q. Sorry. I will call it the fall period,
11 which I will define the fall period as September to
12 December 2010. Okay.

13 During the fall period, were there -- did
14 you see any price changes that were based on --

15 A. Well, what I witness is, right, the
16 default was -- back to the over-the-counter swap
17 prices. So, right, those swap prices wouldn't have
18 reflected the value of the NPV in the, in the
19 convexity effects.

20 Q. Okay.

21 A. And it is probably why nobody traded the
22 contract.

1 Q. But, but didn't -- weren't there open
2 positions?

3 A. There was no market activity after -- as
4 far as I know after that --

5 Q. Okay.

6 A. -- after that one trade with Jeffries.

7 Q. Okay. You think it was one trade?

8 A. I know of the one trade.

9 Q. Okay. Looking back at paragraph 26,
10 where you cite to rule 1002, and we looked at
11 paragraph (i) before, daily settlement price.

12 You write here in paragraph 26,
13 "importantly, IDCH expressly reserved for itself the
14 sole discretion in establishing a daily settlement
15 price that is deemed fair -- that it has deemed a
16 'fair and appropriate reflection' of the market."

17 Do you see that?

18 A. Yes.

19 Q. Is it your -- and you cite to this rule
20 in (i) on Exhibit 4, on page 100, right?

21 A. Yes.

22 Q. Okay. And do you understand this

1 discretion is applying to valuation of a party's
2 open position or to the contracts themselves that
3 may have been bid or offered up?

4 A. Can you repeat that?

5 MR. ULLMAN: Can you read back that
6 question?

7 THE REPORTER: "Question: And do you
8 understand this discretion is applying to valuation
9 of a party's open position or to the contracts
10 themselves that may have been bid or offered up?"

11 THE WITNESS: I'm not sure of the
12 distinction there. The rule says that they have
13 discretion about the settlement price, so the
14 settlement price is -- could be considered the
15 contract that has either been bid or offered. But
16 that also translates into the value of the
17 positions.

18 BY MR. ULLMAN:

19 Q. Okay. So which one is it? Do you think
20 it applies to both or the open position?

21 A. I would read it as applying to both.

22 Q. Okay.

1 A. To the extent that settlement prices
2 affect both.

3 Q. Can you -- at the time that DRW entered
4 into its open position in the Three Month Contract,
5 have you reviewed any, any e-mails, internal DRW
6 e-mails about DRW's understanding of the Three Month
7 Contract?

8 A. I have seen the e-mails internally from
9 DRW. Whether they speak directly to their
10 understanding at the time they entered into the
11 contract, I don't recall.

12 Q. Okay. Do you know whether DRW understood
13 the pricing of the Three Month Contract at the time
14 it entered into its open positions?

15 A. I don't have any specific knowledge of
16 the time. They did produce or one of the DRW
17 employees produced this white paper early 2011 that
18 seemed to enunciate a fairly sophisticated valuation
19 of these contracts.

20 Q. Okay. What about in --I don't want to
21 belabor this, but just so the record is clear, what
22 about in -- I will represent to you that DRW created

1 its open position in August and September of 2010.

2 Okay?

3 At that point do you know whether DRW
4 understood the pricing of the Three Month Contract?

5 A. I presume they had some valuation why
6 they entered into the contract, but that's all I
7 know.

8 Q. Okay. The internal DRW report that you
9 are referring to, is that what you reference or
10 partially what you reference in paragraph 29 on page
11 16?

12 MR. MANNING: Objection, form.

13 THE WITNESS: The Cont, et al. paper?

14 BY MR. ULLMAN:

15 Q. Yeah.

16 A. Is on of the enunciation of estimation of
17 convexity effects.

18 Q. Do you know if that paper was peer
19 reviewed?

20 A. I don't believe so. It is just posted on
21 the Social Sciences Research Network.

22 Q. What is the Social Sciences Research

1 Network?

2 A. It is a venue, a forum for disseminating
3 research, putting out ideas; sometimes used by
4 people to sort of put a marker in the sand to say
5 I'm working on this project, so I have a date and
6 timestamp to say this is a working paper that I
7 thought of before you did or something. But it is a
8 venue for sharing research information.

9 MR. ULLMAN: Let's take a ten-minute
10 break.

11 THE VIDEO OPERATOR: Going off the
12 record. The time is now 11:40.

13 (A recess was taken at 11:40 a.m., after which
14 the deposition resumed at 11:53 a.m.)

15 THE VIDEO OPERATOR: We are back on the
16 record. The time is now 11:53.

17 BY MR. ULLMAN:

18 Q. Back on the record. Let's flip to,
19 through your report to page 17, please. The next
20 series of questions I have are going to be through
21 paragraph 32 through 34, so if you give it a look
22 and look at me when you have a second to -- when you

1 have had a second to review it.

2 A. Okay.

3 Q. For the record, can you explain what the
4 net present value effect is?

5 A. Sure. So in interest rate swap that is
6 cleared, so in interest rate swap, fixed versus
7 available rate, there is an imbalance, first of all,
8 in any swap between who makes the payments upfront
9 and who makes the payments later in the life of the
10 contract.

11 And so in a cleared contract, the NPV
12 effect comes from, in this case the fixed rate payer
13 receives more payments earlier in the contract. And
14 so they can take those cash flows and invest them
15 over the life of the contract until approximately
16 halfway through the contract, where then they start
17 paying more, and the cash flows are negative on
18 average, and so the NPV effect represents the value
19 of being able to get those early cash flows and
20 investing them.

21 And then, of course, ends up being zero,
22 because over the life of the contract, the present

1 value of all the later payments offset the value of
2 the earlier payments.

3 So in the life, during the life of the
4 contract, though, the NPV effect is the net present
5 value of the differences remaining in the, in the
6 cash flows on the contract.

7 Q. And is that -- is the NPV effect
8 observable in any futures contracts?

9 A. Well, it would be in the interest rate
10 futures, any future that has convexity or any
11 imbalance -- I guess, not convexity in this case --
12 but any imbalance between early and late payments
13 that are marked-to-market on a daily basis would
14 have an NPV effect.

15 Q. But can you give me an example of a
16 futures contract that has observable price
17 differences based on NPV effect?

18 A. Well, Eurodollar futures have been shown
19 to have an NPV effect. The characteristics that I
20 have here have been shown, in this interest rate
21 contract, I believe, have an NPV effect. So
22 anything that is cleared or the differential there.

1 Literature, I guess, generally -- and I
2 try to refer to that in my report -- refers to
3 convexity bias or convexity effects. And I think in
4 general some of those, you know, there is a number
5 of people that talk about convexity effects. And I
6 think that they impound sometimes the NPV effect
7 along with that.

8 Q. Okay. But Eurodollar futures, do you
9 believe there is a convexity effect in Eurodollar
10 futures?

11 A. Well, I think other people have shown
12 that there is one, yes.

13 Q. Okay. And do you or do other people that
14 you have read believe that there are pricing
15 distinctions based on the convexity effect on
16 Eurodollar futures?

17 A. Yeah, I believe the Gupta and
18 Subrahmanyam paper actually looks at the development
19 of that, of that market and shows that there is an
20 evolution of understanding of the convexity effect.
21 And that there was a time where valuations shifted
22 from either pricing or settling it at prices that

1 didn't reflect the convexity effect to, to a later
2 regime that did understand that.

3 So I think that that particular paper
4 was, I think, fairly compelling that they
5 demonstrate that there is one in that marketplace.

6 Q. And I read that Gupta, he concludes that
7 the, that the pricing differentials based on the
8 convexity effect were not immediately apparent to
9 the market.

10 A. I would say he showed that there is an
11 evolution of, of understanding of how big that
12 convexity effect would be. I'm not sure he opines
13 on whether the original prices had any convexity
14 effect in them or not.

15 Q. Okay. What was the evolution that
16 occurred on Eurodollar futures?

17 A. Well, I believe that he, in their, in
18 their research, empirical, I think it is called an
19 empirical investigation or something like that, they
20 documented that this appears to have grown over time
21 to what they deem in their paper something more like
22 full value.

1 So it was only partially, perhaps,
2 adopted in the marketplace. And as market
3 participants understood the product better, it
4 became more fully represented in the prices.

5 Q. Is, is Eurodollar futures a liquid
6 contract?

7 A. Well, it depends on which ones you look
8 at.

9 Q. Well, not the gold sheets. Let's talk
10 about the ten year Eurodollars future, a liquid
11 contract?

12 A. I think for purposes of my report, I
13 could find, I think, fairly good seven- and ten-year
14 liquidity. So, you know, active marketplace for
15 those two particular contracts in Eurodollars, yes.

16 Q. What about any other Eurodollar, how
17 about the 30-year?

18 A. Well, I don't have specific knowledge of
19 that market, but when I tried to put my empirical
20 work together, it was, it was difficult to find a
21 good time series of data for all the particular
22 tenors in the Eurodollar market.

1 Q. Do you have an opinion about whether the
2 NPV effect ever affected the closing prices of the
3 Three Month Contract?

4 A. Talking about settlement prices?

5 Q. Um-hum.

6 A. Well, I guess to the extent that if DRW
7 was including the NPV effect in their bids, then it
8 would have been reflected in their bids, that then
9 got translated into the settlement price, yes.

10 Q. Okay. Is that, is that the first time --
11 well, did you, did you ever observe any pricing
12 differences on the Three Month Contract before DRW
13 -- let me rephrase.

14 Did you observe any pricing differences
15 on the Three Month Contract based on the NPV effect
16 before DRW started streaming bids electronically?

17 A. I would say almost by definition, if we
18 were defaulting to the over-the-counter prices, then
19 the over-the-counter prices wouldn't include that
20 component, no.

21 Q. Okay. And same question but for the
22 convexity effect. Is -- when did you first observe

1 pricing differentials based on the convexity effect
2 in the Three Month Contract?

3 A. So one of the things, again, I didn't do,
4 I didn't go back into 2010 and reconstruct what an
5 appropriate price would be to look at a
6 differential, but it appears maybe by logic, if we
7 were defaulting before DRW's bids were put in,
8 defaulting back to the -- to the over-the-counter
9 swap prices, then almost by definition those swap
10 prices are not going to have the convexity effect in
11 them.

12 Q. Okay. Is it a fair summary of your
13 testimony that but for DRW's bids, the NPV effect
14 would not have shown up in the Three Month
15 Contract's pricing?

16 MR. MANNING: Objection.

17 THE WITNESS: No, I don't think you can
18 say this. I mean, I think this other market in
19 Eurodollars show markets learn. And I think part of
20 my report was getting at that, that this is the
21 beginning of this market. And I think participants
22 were learning.

1 And as people learn how to trade or how
2 the valuation of these contracts in the
3 specifications affect that valuation, I don't
4 think -- I don't think you would say that it never
5 would have shown up.

6 BY MR. ULLMAN:

7 Q. Okay. What people were learning about
8 the valuation of the Three Month Contract in terms
9 of an NPV effect during the relevant period?

10 A. Well, certainly anybody who read the
11 Cont, et al. paper that I cited would have some
12 notion that that was a paper about this particular
13 market that mattered. Anybody, I think, who then
14 saw DRW's bids would have some estimation that, you
15 know, if I see a bid that someone is higher than any
16 other, any other pricing, you have to wonder or at
17 least perhaps investigate what the source of their
18 bidding would be, what valuation would be, but I
19 don't know who those people might be other than, you
20 know, MF Global, obviously, I think was attracted to
21 seeing bids on the screen.

22 Jeffries obviously was aware of this.

1 Those are the only other two counterparties in the
2 market that I know of because there wasn't -- there
3 just wasn't any trading.

4 Q. And I take it that would be the same
5 answer for the convexity effect, that you don't have
6 any parties learning -- well, I will rephrase.

7 Do you have any knowledge about any
8 parties learning about price differentials and the
9 convexity effect based on DRW's bids during the
10 relevant period?

11 A. Not direct knowledge, no.

12 Q. Okay. And by just looking at the amount
13 of bid, say you are looking at a screen and a bid
14 comes up, you wouldn't be able to understand why the
15 bid would be higher than the OTC corresponding
16 rates, would you?

17 A. Well, you might be. If you are familiar
18 with the market, if there was no trading beforehand
19 and that's what -- and people recognized that they
20 should be in there, that might be a reason there was
21 no trading beforehand, right?

22 So I don't know that people didn't know

1 about this, and that that's why there was no trading
2 because they didn't think that the prices at the
3 over-the-counter swap were accurate. And that could
4 be an explanation for why there was no liquidity in
5 this.

6 Q. Was there, was there any liquidity based
7 on DRW's electronic bids created?

8 A. Yeah, yeah, I think that's what a bid is,
9 it provides liquidity in my world and the academic
10 world. And I think in the market in general,
11 posting a bid is providing liquidity.

12 Q. What about in terms of consummated trade
13 liquidity?

14 A. I don't know what that means. I mean --

15 Q. Okay. Did DRW's electronic -- sorry I
16 interrupted you, go ahead.

17 A. I mean, consummated trade is a
18 consummated trade. It is not liquidity. I mean, it
19 is, it is a trade.

20 Q. Yeah.

21 A. Liquidity is something that you provide
22 for somebody.

1 Q. Right. Are you aware that --

2 A. In a trade.

3 Q. Right. But sometimes markets are -- a
4 metric of trading volume is used to describe
5 liquidity, right, in futures contracts?

6 A. Yeah, I mean, there is, there is
7 liquidity metrics that use the combination of
8 trading volume and price changes, but it is not the
9 trade itself that is the liquidity. It is how far
10 do you move price perhaps with, with the trade. But
11 it is not the trade itself.

12 Q. Okay. But do DRW's electronic bids ever
13 end into a consummated trade?

14 A. Well, the only consummated trade that I'm
15 aware of is the MF Global trade. And I understand
16 that they did see a posted bid and then negotiated
17 the trade over the counter in the voice broker.

18 Q. Right. But that trade was DK'd, right?

19 A. As far as I know, yes.

20 Q. And the specifics of that trade were
21 negotiated through a broker; am I right on that?

22 A. Yeah, I understand there was some

1 negotiation that went on behind the scenes about how
2 much to do and what the size would be and at what
3 price, yes.

4 Q. Right. And that was different than
5 whatever bid was being shown on the screen on that
6 day?

7 MR. MANNING: Objection.

8 BY MR. ULLMAN:

9 Q. Is that right?

10 A. Well, I think the price they settled
11 upon or the price that ended up being DK'd differed
12 than the price they were quoting. But I -- in my
13 understanding it is the posting of the bid that led
14 to the interchange.

15 Q. Outside the DK'd MF Global trade, did any
16 of DRW's electronic bids end up into a consummated
17 trade?

18 A. No, not as far as I am aware.

19 Q. When you talked about -- is it Gupta or
20 Goopta?

21 A. Gupta.

22 Q. When you talked about Gupta's papers that

1 you cite in here and it talks about the evolution of
2 Eurodollar futures to understand its effects and the
3 resulting pricing differences, was that -- do you
4 have an understanding of whether the evolution had
5 to do with consummated trades or just orders?

6 A. Well I think that speaks to the price
7 discovery process that I tried to discuss in my
8 report. And I think both trades and quotes and all
9 market activity, I think, contributes to some price
10 discovery.

11 Q. Okay. But in terms of the differences
12 and -- or the evolution of pricing differentials on
13 Eurodollar futures, that occurred based on actual
14 trades; am I right about that?

15 A. Well, like I said, I think most likely it
16 had something to do with consummated trades, but I
17 don't think you can rule out the fact that quoting
18 behavior or -- also evolved. And so that
19 contributed to the price discovery as well.

20 It is almost by definition, right?

21 Q. Yeah.

22 A. You can't typically trade outside of the

1 quotes, so by consummating a trade, you must have
2 had a quote at that same price.

3 Q. Yeah. And, and --

4 A. That preceded it, actually.

5 Q. So I guess what I am asking is the
6 Eurodollar futures contract, at least the seven- and
7 ten-years that you look at, you agree is a heavily
8 traded instrument? Do you agree with that?

9 A. Yeah, it is fairly liquid, yes.

10 Q. And this price evolution that occurs in
11 Eurodollar futures, was that -- were those prices a
12 result of bids hitting offers?

13 A. I presume so. I wasn't familiar with the
14 exact information in the paper, but most of the time
15 you have quotes and trades. The way markets
16 operate, you have people buying and selling and it
17 is usually somebody posts a bid or an offer that
18 gets hit by somebody else.

19 Q. Right. And that is part of the evolution
20 that you are describing in terms of how Eurodollar
21 futures, the market realized this effect and its
22 resulting pricing differentials?

1 A. Right.

2 Q. Okay. Why don't you look at, if you
3 would, the paragraphs 35 through, let's go 35
4 through 39. But if you would like, I am going to
5 ask you questions based on paragraphs 35 to 43. So
6 we can break it up any way you would like.

7 If you look at paragraph 39,
8 specifically, near the middle of the paragraph your
9 report indicates, "although quantifying the NPV and
10 convexity effects requires some modeling, both
11 benefit the fixed rate payer in an interest rate
12 swap futures contract."

13 Do you see that?

14 A. Yes.

15 Q. Okay. And why does quantifying the NPV
16 and convexity effects require modeling?

17 A. Well, if you want to get -- well, if you
18 want to quantify it, so we know they exist. As long
19 as there is upward sloping yield curve, you get NPV
20 effect. In the downward sloping yield curve, you
21 would actually have the opposite.

22 And if there is a flat yield curve, there

1 wouldn't be one. But to try to quantify what it is
2 worth, right, you have to know the slope. So that
3 is why.

4 And then the modeling comes in with the
5 convexity effect. And the convexity effect of risk
6 is related to the interest rate volatility. And so
7 you have to have some estimate over the life of the
8 contract. If you are buying something today, you
9 want to make some estimate about what the value of
10 these cash flows are going to be looking forward, so
11 you have to have some model that predicts what the
12 volatility in the interest rate path is going to be
13 to try to quantify what you think the value to those
14 extra cash flows will be. So that's, that's where
15 the modeling comes in.

16 Q. Okay. Would you have to model in a
17 heavily-traded market?

18 A. Yeah.

19 Q. Why?

20 A. Well, because you would want to know, if
21 you are heavily traded, even there, like there are
22 slight differentials, right? So somebody might have

1 a demand to buy or something like that and you want
2 to stand ready to purchase or sell, excuse me, but
3 you want to do it at a price, right?

4 So if you are making a market or
5 providing any liquidity in a market, I think the
6 prudent thing is to try to value what you are going
7 to actually model. A model to get a value before
8 you actually enter the market.

9 Q. Okay. And at the end of the sentence you
10 state -- well, I will read it again. "Although
11 quantifying the NPV and convexity effects requires
12 some modeling, both benefit the fixed rate payer in
13 an interest rate swap futures contract."

14 I think you testified earlier that DRW
15 held a long position in the Three Month Contract?

16 A. Right.

17 Q. And that's the fixed payer in the Three
18 Month Contract?

19 A. Right.

20 Q. Okay. Did DRW benefit from the NPV and
21 convexity effect?

22 A. Did they benefit? Well, they benefitted

1 only to the extent that they entered in at a
2 favorable rate in my estimation at the initiation of
3 the trade. But then, yeah, they benefitted, like I
4 said, even through 2010 and beyond that from the
5 convexity effect and the NPV effect.

6 I think, again, the NPV effect would be a
7 zero over the life of the contract but they got out
8 early. I don't know if they -- I don't know what
9 the negotiated exit from the strategy was.

10 Q. I read your word "benefit" to mean
11 financially benefit. Am I reading that incorrectly?

12 A. Yeah. I mean, if -- I mean, like I said,
13 the NPV effect is zero over the life of the
14 contract, so if you don't ever exit, you don't get
15 any benefit. But the value is inherent in the
16 contract if you go out and market it again, and you
17 wanted to sell it, you should be able to reap the
18 benefit, if there was some liquidity at that price
19 because it is a real benefit for owning the
20 contract.

21 Q. Okay. Did, did DRW financially benefit
22 from the NPV effect in its long position in the

1 Three Month Contract?

2 A. Like I said, I don't know -- I didn't
3 break out like what the negotiated price was or how
4 much would be attributable to convexity or NPV. But
5 presumably you could map out where we were in the
6 life of the contract with some estimation of what
7 that value was.

8 Q. Okay. So you don't know about financial
9 benefits based on the NPV and convexity effect for
10 DRW?

11 A. No, that was -- I mean, that was just a
12 statement about NPV effect. And so part of the
13 benefit could be from the convexity effect too.

14 Q. Okay. Did DRW financially benefit from
15 the convexity effect in holding its long position in
16 the Three Month Contract?

17 A. I believe so.

18 Q. Okay. When, when did it first benefit?

19 A. Well, it would have benefitted I think
20 right away if they entered in at an advantageous
21 price, but I think the convexity value accrues as
22 long as, like I said, as long as there is volatility

1 in the interest rate market.

2 I don't know, like I said, I didn't
3 quantify how much of that was at the beginning of
4 the contract or the first part of the life of their
5 open position.

6 Q. Okay.

7 A. So during 2010, but I think probably
8 started benefitting right away.

9 Q. Okay. But, but you don't know because
10 you didn't look at the value of their open position
11 in September to December 20 --

12 A. No, I mean, by extrapolation --

13 MR. MANNING: Objection.

14 THE WITNESS: -- since this exists and we
15 know positive interest rate changes give them the
16 cash flow, then they did benefit.

17 BY MR. ULLMAN:

18 Q. Even, even if they were using OTC rates
19 during that period?

20 A. Yeah, because even if you benchmarked to
21 OTC rates, as long as there is volatility, right, so
22 as long as interest rates -- as long as whatever

1 interest rate you are abusing goes up and down, and
2 there is variation margin exchanged, that accrues a
3 benefit to the long side.

4 Q. Did DRW -- do you have any idea about
5 what DRW did with variation margin when, when it won
6 its trades -- I will, I will rephrase.

7 Do you know what DRW did on a day that it
8 had positive variation margin?

9 A. No. I mean, most firms have some sort of
10 short-term investment strategy. They want to keep
11 some margins liquid. And, of course, they are
12 running a big firm, they have multiple positions,
13 but I don't know how they managed their cash from
14 day to day, no.

15 Q. Let's go to paragraph 41. Please review
16 that and look up when you have had a chance to look
17 at it.

18 A. Okay.

19 Q. The second sentence says, "Given that the
20 Three Month Contract lacked a PAI adjustment, the
21 difference in value between the Three Month Contract
22 and its non-cleared counterpart would be accounted

1 for in another way, such as higher fixed rates that
2 incorporate the value of NPV and convexity effects."

3 Do you see that --

4 A. Yes.

5 Q. -- sentence? And you agree with that
6 sentence as you sit here today?

7 A. Well, it is in the context of the
8 LCH.Clearnet, right?

9 Q. It refers to the sentence above it?

10 A. Right.

11 Q. Okay. How would -- how -- you are saying
12 here that it would be accounted for, such as higher
13 fixed rates that incorporate the value of the NPV
14 and convexity effects. Is that how it would be
15 accounted for, the distinction that you are talking
16 about?

17 MR. MANNING: Objection.

18 THE WITNESS: I would say that is one way
19 it could be.

20 BY MR. ULLMAN:

21 Q. Okay. What are the other ways?

22 A. Well, the Eris Exchange, for instance,

1 incorporates those effects at settlement. So PAI is
2 something we do along the life of the contract to
3 compensate the short party for the lost value.

4 Eris has come up with a technique to look
5 at that cash flow at the end of the life of the
6 contract, but they -- both those mechanisms in my
7 impression help to offset this convexity and NPV
8 effect, right.

9 Q. Okay. And who does that accounting as
10 described in your second sentence in paragraph 41?

11 A. I am not talking about accounting as a
12 field. I am talking about accounting in terms of
13 with a value of the contract.

14 Q. Right. So you just described a way an
15 Exchange can counteract this. Right?

16 A. Right.

17 Q. Are there any other ways that the lack of
18 a PAI adjustment can be accounted for?

19 A. I, I can't think of any. I'm sure
20 innovation -- I mean, that's one of the innovations
21 of the Eris Exchange, is to pile it into the final
22 cash flows.

1 Q. And that's -- that's a specific
2 characteristic of the Eris product, right?

3 A. Right.

4 Q. And that's different than the specific
5 characteristics of the Three Month Contract in terms
6 of PAI; is that right?

7 A. Right.

8 Q. Okay. Next sentence. "Indeed, only with
9 the NPV and convexity effects reflected in daily
10 settlement prices would IDCH contract prices reflect
11 the Three Month Contract's true economic value." Do
12 you see that?

13 A. Yes.

14 Q. Okay. Who determines true economic
15 value?

16 A. Typically that's what markets are for.
17 So markets are established to provide a venue for
18 price discovery.

19 Q. In fact, DRW's bids on the next sentence
20 says, "In fact, DRW's bids on the Three Month
21 Contract rationally did this exact thing." By
22 "exact thing," do you mean reflect what a market

1 would typically do to reflect true economic value?

2 A. Yes.

3 Q. And DRW bid higher yields for the Three
4 Month Contract reflecting its willingness to pay a
5 premium relative to the close buying rates to the
6 short future side. Do you see that?

7 A. Yes.

8 Q. Okay. Do you believe that there are any
9 other rational reasons for DRW to bid higher yields
10 for the Three Month Contract than the corresponding
11 rates?

12 A. Other rational reasons?

13 Q. Um-hum.

14 A. I guess your allegations go to that, if
15 you think somebody nationally wants to manipulate, I
16 don't know if that is rational or not.

17 Q. What, what was the effect of -- do you
18 know what the effect would have been to put -- place
19 a bid on a trading day on a tenor of the Three Month
20 Contract that was higher than the corresponding
21 rates?

22 A. Yeah, I think it is, it is in your

1 allegations. And I think set forth that higher
2 prices lead to cash flows in on the variation margin
3 for the long party.

4 Q. Okay. And DRW is the -- had a long
5 position in the Three Month Contract?

6 A. Yes.

7 Q. If you move to paragraph 42, if you can
8 read paragraphs 42 and 43, please give them a look
9 or please review and then give me a look and we can
10 talk about them.

11 A. Okay.

12 Q. In the last sentence of paragraph 42 you
13 write, "Without adjustment to counteract the NPV and
14 convexity effects like, for example, PAI, the NPV
15 and convexity effects benefit the party with the
16 long position at the expense of the party with the
17 short position."

18 Do you see that?

19 A. Yes.

20 Q. Was there ever an adjustment to
21 counteract the convexity effects of the Three Month
22 Contract?

1 A. Not that I'm aware of. I think there was
2 some negotiation from Jeffries to try to convince
3 the Exchange to incorporate something to counteract,
4 but that was -- the contract terms weren't altered.

5 Q. Okay. How about the orders placed on the
6 Three Month Contract?

7 A. I was talking here about adjustment to
8 the contract itself.

9 Q. Okay. Through the Exchange or
10 clearinghouse?

11 A. Right.

12 Q. Okay. Look on paragraph 43. If you
13 could, give it a read.

14 A. Okay.

15 Q. In the last sentence you write "According
16 to their testimony, all of DRW's bids both during
17 and outside the settlement period reflected DRW's
18 calculations of the NPV and convexity effects they
19 bid at higher yields, reflecting the fact that the
20 short party could be expected to demand a higher
21 yield to offset the NPV and convexity effects."

22 Do you see that?

1 A. Yes.

2 Q. And what is your understanding of how
3 long DRW is placing bids electronically in the Three
4 Month Contract?

5 A. Electronically? I think it was mostly
6 the relevant period from January through August,
7 mid-August 2000.

8 Q. So eight months, give or take, seven
9 months?

10 A. Yeah, seven months.

11 Q. So seven months. And during the seven
12 months, did a short ever demand a higher yield to
13 offset the NPV and convexity effects?

14 A. Yeah. In fact, I don't know how many
15 shorts were out there, but nobody chose to hit their
16 bids, which meant they might have demanded something
17 higher.

18 Q. But you don't know for sure?

19 A. No, right.

20 Q. Okay. Let's look at paragraph 44. Why
21 don't you read it to yourself and look up.

22 A. Okay.

1 Q. In paragraph 44 you write, "Garry
2 O'Connor, former CEO of IDCG, has stated that he was
3 aware of the fact that the lack of a PAI adjustment
4 (or any other feature to compensate for the cash
5 flows that would benefit the long party) led to a
6 valuation difference between the Three Month
7 Contract and the corresponding OTC interest rate
8 swap."

9 Do you see that?

10 A. Yes.

11 Q. As you sit here today, do you believe
12 that to be true, that's what Mr. O'Connor testified
13 to?

14 A. Yes.

15 Q. Okay.

16 MR. ULLMAN: What are we up to, 5?

17 THE REPORTER: Correct.

18 (Deposition Exhibit Number 5 was marked for
19 identification.)

20 BY MR. ULLMAN:

21 Q. Can you mark this as 5, please.

22 I am handing you what has been marked as

1 -- an excerpt that has been marked as Exhibit 5. On
2 your footnote 45, you cite the deposition of Garry
3 O'Connor, February 29th, 2012, pages 21 and 22. Do
4 you see that?

5 A. Yes.

6 Q. Okay. And am I right that what I have
7 handed you as Exhibit 5 is what appears to be a
8 February 29th, 2012 transcript. Do you see that?

9 A. Yes.

10 Q. Is this the transcript that you were
11 citing in footnote 45?

12 A. It appears to be, yes.

13 Q. Okay. Can you -- and you cited pages 21
14 through 22, right?

15 A. Yes.

16 Q. Okay. Why don't you give those a read,
17 pages 21 and 22.

18 A. Okay.

19 Q. Can you point out in the transcript where
20 Mr. O'Connor testifies that the lack of PAI led to a
21 valuation difference between the Three Month
22 Contract and the corresponding OTC interest rate

1 swap?

2 A. Well, he explains that he is not -- that
3 they chose not to have PAI in the contract. He ends
4 on line 20 of page 21 -- well, I guess line 15 of
5 page 20, he says, "price alignment interest is an
6 adjustment to variation market to reflect the cost
7 of funding cumulative collateral."

8 Q. Right. But it doesn't talk anything
9 about leading to the valuation difference; am I
10 correct?

11 A. No, but the cost of funding cumulative
12 collateral is a difference in valuation. That's why
13 PAI is made. It is a compensation for that
14 differential in value.

15 Q. Yeah, and I don't want to belabor it, but
16 I am reading it, and I don't see anything that talks
17 about valuation differences between the Three Month
18 Contract and the corresponding OTC interest rate
19 swaps.

20 Do you see that in this testimony that
21 you have cited?

22 A. No, these are my words. I didn't quote

1 him.

2 Q. Oh.

3 A. I am citing what he is saying.

4 Q. Well, but you say here he stated that he
5 was aware of the fact that the lack of a PAI
6 adjustment led to a valuation difference between the
7 Three Month Contract and the corresponding rates --
8 I'm sorry, and the corresponding OTC interest rate
9 swaps. And I am just asking you where in this cite
10 it says that?

11 A. That's what I just pointed you to. He is
12 aware they don't have PAI. And he precedes that by
13 saying PAI is an adjustment to variation market,
14 reflecting the cost of funding cumulative
15 collateral. That's, that's the difference.

16 Q. Do you have any other cites that support
17 what you are writing in paragraph 44?

18 A. No. It is pretty much just about what he
19 said.

20 Q. Okay.

21 A. He does, though -- he has a letter that
22 would explain some of the same things.

1 Q. What is the letter?

2 A. I believe he sends a letter to the CFTC.

3 And, if I recall, it said similar things that, you

4 know, we have contract specifications, so we

5 actually didn't include PAI in that contract.

6 Generally I guess to differentiate the product for

7 different market participants.

8 Q. Paragraph 46, you write, "When the

9 corresponding rates are used as a default price for

10 the Three Month Contract, as IDCH did prior to the

11 bids at issue in this matter, the settlement price

12 will not reflect true supply or demand or fair value

13 for the Three Month Contract."

14 Do you see that sentence?

15 A. Yes.

16 Q. Okay. And to the bids, are you referring

17 to DRW's bids?

18 A. Yeah, the bids at issue, right.

19 Q. Okay. And you say the settlement price

20 will not reflect true supply or demand. Can you

21 elaborate on that, please?

22 A. Well, if we default to the

1 over-the-counter swap price, it is different than
2 the exchange traded futures contract. So if we
3 default to those prices, as whatever prices
4 establish those over-the-counter swaps aren't
5 necessarily the supply or demand for the actual
6 futures product itself that is cleared.

7 Q. Do clearinghouses get to determine how
8 settlement prices are arrived at?

9 A. Yeah.

10 Q. Okay. The next thing you say is, true
11 supply or demand or fair value for the Three Month
12 Contract. What do you mean by "or fair value"?

13 A. Some estimation of the value of the
14 contract that is traded.

15 Q. Okay. And who does that estimation?

16 A. Well, generally speaking, traders do. I
17 guess the clearinghouse could do it too if they
18 wanted to.

19 Q. Go to paragraph 47, please. The first
20 sentence, "The fact that OTC rates, (i.e., the
21 corresponding rates) can be and were used by IDCH as
22 reference rates for the Three Month Contract, given

1 the lack of actual electronic bids, does not mean
2 that the corresponding rates were the most
3 appropriate rates to apply."

4 Do you see that sentence?

5 A. Yes.

6 Q. Again, clearinghouses are able to
7 determine how they calculate settlement rates. Am I
8 right?

9 A. Yes.

10 Q. Okay. And I think you testified before
11 that you looked at some e-mails, internal DRW
12 e-mails about its valuation or its understanding of
13 the Three Month Contract before it entered into its
14 long positions. Is that a fair summary of your --

15 A. Yes.

16 Q. Okay.

17 A. Well, before they entered in?

18 Q. Yeah. I want to know --

19 A. No. I didn't, I didn't -- I didn't do
20 any valuation necessarily of 2010 conditions or --

21 Q. Okay. Do you know whether anyone at DRW
22 understood that in the absence of market activity,

1 that the Three Month Contract would settle to the
2 corresponding OTC rates before DRW entered into its
3 long positions?

4 A. Well, I presume they could see that they
5 were settling to the OTC rates, yeah, so that seems
6 like a tautology. Anybody who is watching the
7 market would know where they were settling.

8 Q. Okay. If you are a market participant
9 and you disagree with the way a clearinghouse is
10 settling a contract in which you have a position,
11 are there any options to remedy that, if you are a
12 market participant?

13 MR. MANNING: Objection.

14 THE WITNESS: Well, I think this case is
15 an example of that. Jeffries tried to get the
16 clearinghouse to alter their clearing and settlement
17 procedures very specifically, right? They lobbied
18 to ask for a change in the contract terms.

19 BY MR. ULLMAN:

20 Q. Well, how about in terms of -- and I
21 guess you could exit the position. Is that another
22 option?

1 A. Option to -- it wouldn't necessarily
2 affect the settlement procedures. Is that what you
3 are asking?

4 Q. Well, I am not saying -- I am not talking
5 about -- I am talking about you are a market
6 participant. You enter into a contract and you
7 understand how it is going to be settled. And
8 throughout the life of the contract, you become
9 displeased with how it is being settled.

10 And your experience at the CFTC as an
11 economist, are there -- what options would that
12 market participant have?

13 A. Well, other than, I think, lobbying the
14 exchange and lobbying the CFTC, I mean, to see if
15 something somehow was inherently unfair, but I think
16 in this case, again, I think a non-accretion on the
17 road back, something like everyone agreed on the
18 settlement terms, the contract was established.

19 And so I don't know, I don't know how
20 fruitful that would be in this particular case. I
21 don't know of any case where the CFTC or a contract
22 has been altered after or retroactively to people

1 entering into that contract.

2 Q. Mark this as 6. Is the microphone
3 better?

4 (Deposition Exhibit Number 6 was marked for
5 identification.)

6 BY MR. ULLMAN:

7 Q. I am handing you what has been marked as
8 Exhibit 6. Will you give it a read. And when you
9 have had a chance to look at it, I have a few
10 questions for you.

11 A. Okay.

12 Q. Did you see this document before?

13 A. I am not sure actually. I don't think
14 so.

15 Q. Okay. If you look down to the first
16 e-mail in the chain, which is from Don Wilson on
17 July 23rd, 2010 at 1:54 p.m. central time, central
18 daylight savings time?

19 A. Right.

20 Q. Do you see that?

21 A. Yes.

22 Q. Down here in DRW only number 4, Mr.

1 Wilson writes, "priority is to really understand
2 IDCG. Confirm the contract has full convexity bias
3 (despite the fact that they will force it to settle
4 at non-convexity biased prices."

5 And then that's what I am interested in.
6 Have you -- so does this refresh your recollection
7 about how this thing --

8 A. It suggests at least they know about the
9 convexity bias before they put on that trade.

10 Q. Okay. And they understand that before
11 they put on the trade, that it is settling to
12 non-convexity biased prices, right?

13 A. Yeah, that's their impression anyway,
14 right?

15 Q. Okay. And then you write here, on
16 paragraph 47, "As noted before, the Three Month
17 Contract and its non-cleared OTC interest rate swap
18 counterpart have different economic values. Just as
19 the process for valuing a home in Boston might be
20 similar to valuing a home in Detroit, it would not
21 be appropriate to value Boston's real estate based
22 on Detroit's prices."

1 Do you see that?

2 A. Yes.

3 Q. Okay. But if you bought a house in
4 Boston and you understood that Detroit was being
5 used to value that real estate, would that be
6 acceptable?

7 A. That would be a bargain, right, because
8 nobody wants to live at Detroit prices.

9 Q. Right?

10 A. Yeah.

11 Q. Okay. Then further on you say,
12 "Likewise, given the economic differences between
13 the Three Month Contract and OTC interest rate swap,
14 the supply or demand in the two markets would also
15 be expected to differ."

16 What did you mean by that sentence?

17 A. Just what it says, two different
18 contracts, so people would be willing, different
19 people would be willing to trade, buy or sell in
20 each contract.

21 Q. Okay. Did the -- do you believe that the
22 economic differences between the Three Month

1 Contract and the OTC interest rate swap resulted in
2 pricing differences?

3 A. Results in valuation. I am not sure what
4 you mean by pricing. There was no trading, really,
5 in the -- in the Three Month Contract, so I don't
6 know how it could get a difference in prices.

7 There is no quoting in Three Month
8 Contract at this time, so, again, difference in
9 prices is kind of moot.

10 Q. Did the supply or demand in the two
11 markets ever differ?

12 A. Well, almost certainly. There was no
13 supply or demand in the Three Month Contract for the
14 most part of 2010, right. And there was
15 over-the-counter swap contracts being traded but
16 that they were benchmarked to, at least, in the fall
17 of 2010.

18 Q. Okay. Let's look at page 25. Well,
19 let's start talking generally about this.

20 Starting on page 25 we talk about
21 modeling; is that right?

22 A. Yes.

1 Q. And here the modeling was, am I right,
2 that the modeling in this case was largely
3 accomplished by employees of the Analysis Group?

4 A. Yeah. I mean, I settled on -- I directed
5 them to estimate Hull-White One-Factor Model based
6 on the two markets' empirical data that I thought
7 were relevant.

8 Q. Did you ever look -- do you know if DRW
9 employed a model when placed -- before placing its
10 bids?

11 A. I don't know, like, again, at the time in
12 August or when that e-mail was sent, but they are
13 talking about convexity effects, they came out six,
14 eight months later with a paper on this.

15 I mean, I presume someone behind the
16 scenes was doing this work. And the woman they
17 refer to in that e-mail that we just discussed was
18 an author on that paper.

19 Q. And so in February of 2011, you are aware
20 DRW was placing electronic bids?

21 A. Yes.

22 Q. On the contract?

1 A. Yes.

2 Q. And your report says and I think you
3 testified to that those rates were above the
4 corresponding rates. Is that fair?

5 A. Right.

6 Q. So that specific bid level that DRW was
7 putting in, do you know if that was a result of a
8 model?

9 A. Again, I mean, I presume it was being --
10 the result of a model because that's what traders do
11 in these marketplaces. And they -- they produced a
12 model in a publicly-released paper on March 11th.

13 So you can't write a paper and do it all
14 in one day, so I presume there was some lead-up time
15 that they were doing the modeling internally.

16 Again, I didn't verify could you tell me
17 when you came up with a model or anything. I don't
18 have any timing issue or any knowledge of the timing
19 of when they came up with that.

20 Q. Okay. But outside of your presumption,
21 you don't have any facts or evidence that shows that
22 you believe DRW was using a model to figure out the

1 bid rates that it was putting in, electronic bid
2 rates it was putting in in February of 2011?

3 A. I don't know how the statements that
4 could be made in the e-mail and otherwise to get a
5 convexity effect, if you are not modeling it. But,
6 yeah, I don't have a specific knowledge of what they
7 were doing at that point in time.

8 Q. Okay. And that's throughout the bidding
9 in the relevant -- that goes for the bidding in the
10 relevant period, right?

11 A. Well, the paper was released on March
12 11th. At least there is some public dissemination
13 that there is a model that one of their employees
14 was using to value the convexity effect through that
15 model.

16 Q. But in terms of -- your report says this,
17 and you understand that the pricing on the Three
18 Month Contract was expressed in terms of rates. Do
19 you understand that?

20 A. Yes.

21 Q. Okay. And you understand that DRW was
22 putting in rates or prices above the corresponding

1 rates electronically during the relevant period. We
2 agree on that point?

3 A. Yes.

4 Q. But in terms of the specifics, the
5 specific rates that DRW was putting in as bids, you
6 don't know whether they are using a model or not to
7 come up with those rates, do you?

8 A. In the statements that these employees
9 made themselves and the facts that we see coming
10 out, I don't know if I know. I could say I am
11 95 percent confident.

12 I would say I am 99 percent confident,
13 yeah, that they -- that they were using a model. I
14 mean, prudent traders who were in the marketplace
15 and trying to talk about a convexity effect will
16 have to monitor it because there is literature out
17 there that shows some markets don't have a convexity
18 effect. So it is not something you are just going
19 to guess at and say that it is there.

20 Q. Did you ever look at DRW's model?

21 A. No.

22 Q. Okay. So you don't know?

1 A. I don't know what?

2 Q. Well, I mean, if you never looked at
3 DRW's model, then how would you ever know whether
4 the bids they put in that were over the
5 corresponding rates corresponded to that model? Is
6 that a fair statement?

7 A. I think my report was getting at do their
8 bids -- could I, if I were trying to model it, are
9 there bids similar? So that was the spirit in which
10 I approached my report, not to justify what they
11 were doing, necessarily, because I didn't know.

12 For all I knew, they couldn't be telling
13 the truth and they were just putting in bids and
14 trying to reap some benefit from settlement prices.

15 So my whole exercise in my report was to
16 try to put some science to the issue, look at
17 concurrently traded products that have the same
18 features that depend on interest rate changes and
19 get an estimation, you know, I wouldn't probably
20 have written the same report if I came up with a
21 convexity bias of two basis points and I saw that
22 they were quoting 40 ahead. To me that would have

1 been a little bit more problematic from the
2 Defendants' side.

3 So, all right, so my estimation was to do
4 my own independent work to see if it comported with
5 their behavior.

6 Q. Did your independent work in the report
7 take into account anything that was delineated in
8 DRW's white paper?

9 MR. MANNING: Object to the form.

10 THE WITNESS: Well, the techniques were
11 dissimilar in the sense that Hull-White One-Factor
12 Model, so Hull-White do this model. And there is
13 Cox-Inger-Soll-Ross and Vasicek interest rate
14 variability models that you can use.

15 Hull-White actually, the benefit of their
16 paper is that they show that the results from their
17 exercise that Hull-White did back in 1990, came to
18 similar valuation as a number of other models.

19 So being familiar with that model, that
20 was the choice that I made. But that -- so it
21 happens to be the same thing they did. The Cont,
22 et al. paper, which is the DRW White Paper, I

1 believe they used simulated interest rate curve.

2 And so, again, I wouldn't have been
3 comfortable with using simulations. I wanted to use
4 actual market data, which is typically how it is
5 done.

6 And I presume they probably did use
7 actual market data too. And then in their publicly
8 displayed model, put something more generic in.

9 BY MR. ULLMAN:

10 Q. Why do you presume they would use however
11 they have market information?

12 A. Well, market information, so, for
13 instance, I went to the swaptions market and got
14 prices from actively-traded contracts on the day
15 that I was valuing the contract in this convexity
16 bias.

17 Q. So let me make sure I understand. In
18 your report you independently constructed a model to
19 see whether DRW's bids reflected the convexity
20 effect and the NPV effect. Is that a fair
21 statement?

22 A. Yes.

1 Q. But by doing that, you didn't take into
2 -- you were not trying to emulate DRW's model when
3 it placed the bids, if it indeed used the model that
4 did so?

5 A. Right.

6 Q. Okay. So this is just -- so this is sort
7 of an after the fact, I am making a model to see if
8 DRW's bids fit into my -- your model's description
9 of where fair value was?

10 MR. MANNING: Objection, form.

11 THE WITNESS: Yeah. I mean, yeah, it is
12 my -- it is my, my application of the Hull-White
13 Model, so it is not really my model, but --

14 BY MR. ULLMAN:

15 Q. Okay, okay. It is about 1:00. Take an
16 hour for lunch? Thanks.

17 THE VIDEO OPERATOR: Going off the
18 record. The time is now 12:56.

19 (Whereupon, at 12:56 p.m., a lunch recess
20 was taken.)

21

22

1 AFTERNOON SESSION

2 (2:04 p.m.)

3 THE VIDEO OPERATOR: We are back on the
4 record. The time is now 14:04.

5 BY MR. ULLMAN:

6 Q. Back on the record after lunch.

7 Mr. Harris, could you look at Exhibit 3,
8 please, your report. And if you could, I'm
9 interested in asking a few questions about paragraph
10 57 under pricing and calibration.

11 A. Okay.

12 Q. Here you talk about the calibration of --
13 of the model you use in your report. Is that
14 correct?

15 A. Yes.

16 Q. Okay. And did you use any data points
17 that related to actual trades in the Three Month
18 Contract in your model?

19 A. No, the calibration calibrates to the
20 actual trades in these other markets.

21 Q. Okay.

22 A. That are sensitive to interest rates but

1 not to the three month.

2 Q. Okay. So it ignores consummated trades
3 on the Three Month Contract?

4 A. Well, yeah, there were no trades in the
5 Three Month Contract, so --

6 Q. What about the -- the OTC positions that
7 were -- that were negotiated off Exchange and then
8 converted to futures contracts?

9 A. Well, there were none of those in the
10 relevant period either.

11 Q. Okay. What about before the relevant
12 period with those trades? Did you -- you didn't
13 look at those either?

14 A. Not for calibration, no. The way the
15 calibration works is looking at concurrent market
16 conditions, so that would necessitate having a trade
17 like on the particular day.

18 Q. Okay.

19 A. And then estimating the model for that
20 day and then extrapolating from those parameters
21 what the value of the Three Month Contract would be.

22 Q. Okay.

1 A. On that day.

2 Q. I'm not sure you can make -- you can make
3 this -- if you can make this conclusion, but I'm
4 going to ask you anyway.

5 Is -- is the best metric of pricing
6 information on a contract previous consummated
7 trades of the same contract?

8 A. Well, I think it depends on the
9 conditions. In this contract, I would say no.

10 Q. Okay. Why not?

11 A. Well, substantial amount of time had
12 passed since the previous trade was made, so like
13 any financial market, you know, things change day to
14 day, week to week. And the only time you -- you
15 could go back, you would have to look back months to
16 try to figure out, and so in this case, I would say
17 no.

18 Q. Okay. In your model, you are analyzing
19 the differences between where you deemed fair value
20 and over-the-counter swap contracts. Am I right
21 about that?

22 A. Yeah, that's one component, right.

1 Q. Okay. And that component measures, what
2 you call it, in economics, the delta or the
3 difference between -- the spread between these two
4 rates, right?

5 A. Right. So the difference would be an
6 estimate of this NPV and convexity effects.

7 Q. And you could -- understanding that the
8 markets go back and forth when DRW opened its -- or
9 back up.

10 I think you testified earlier, we talked
11 about earlier, I represented to you that DRW opened
12 its positions off exchange in August and September
13 of 2010. Do you remember that?

14 A. Yes.

15 Q. Okay. And understood that, between the
16 relevant period and when these positions were opened
17 in August and September 2010, the markets have
18 shifted. Is that fair to say?

19 A. Yeah. Interest rate sensitive security
20 markets, yes.

21 Q. And I think that's what you were
22 testifying about, about the components of your

1 model. But you could -- you could measure -- you
2 could isolate those variables by measuring the
3 spread between the OTC rate and what those contracts
4 were executed on, and then using that in your model
5 going forward; is that -- can you do that or is that
6 -- would that bother your --

7 MR. MANNING: Object to form.

8 You can answer.

9 THE WITNESS: If we had prices from this
10 market, the Three Month Contract market, yeah, that
11 would be another valuation point. Again, there was
12 no trades in the Three Month Contract, so --

13 BY MR. ULLMAN:

14 Q. Okay.

15 A. -- it was hard to do that on -- during
16 the relevant period.

17 Q. Okay. Please turn to paragraph 58. If
18 you could, please read paragraph 58 and 59 to
19 yourself and look up when you've had a second to
20 review it.

21 A. Okay.

22 Q. That sentence says, "I find my valuation

1 of the Three Month Contract and daily estimates of
2 the NPV and convexity effects are consistently in
3 the range of DRW's bids during the relevant period
4 across multiple maturities."

5 Do you see that sentence? It's the last
6 sentence on 58.

7 A. Yes.

8 Q. Okay. What does -- what did you mean by
9 "consistently in the range of DRW's bids"?

10 A. Well, the exhibit kind of shows that. I
11 don't know if you want to turn to that.

12 Q. Sure.

13 A. So to get these specifics -- I mean, so
14 if you just want to look at Exhibit 3-A, I get
15 estimates from my model in the, say, 17 to 23 basis
16 points range, which would be the value of the
17 convexity and NPV effects in this contract, that
18 particular one.

19 Q. Um-hum.

20 A. And DRW's bids are in that range.

21 Q. Okay. Does your model allow you to
22 specifically determine what the proper price is on a

1 certain tenor on a certain day?

2 A. No, the model yields an estimate of what
3 the price would be.

4 Q. Okay. So -- so it can't?

5 A. Well, I mean, the estimate is specific.
6 I can't vouch for whether that's exactly the right
7 price or not.

8 Q. Okay. And -- and the futures contracts,
9 are there multiple prices for -- correct prices for
10 futures contracts on any given day?

11 A. Well, in most markets, there's at least a
12 bid and an offer and sometimes transaction prices
13 that are all different. So in that regard, yeah,
14 usually there is a range of prices that are -- seem
15 deemed acceptable or that are executable within the
16 market.

17 Q. But for mark to market purposes and for
18 purposes of -- of determining variation margin,
19 there's one price?

20 MR. MANNING: Are we talking about the
21 free-market contract or we talking about markets
22 generally?

1 BY MR. ULLMAN:

2 Q. We're talking futures generally --
3 futures market generally. Right.

4 A. Yeah, yeah, generally, I mean, you have
5 to have something to settle to, and so that's why I
6 think there's a lot of -- most Exchanges put a lot
7 of mechanisms around determining what that price is
8 so that it reflects fair value.

9 Q. Okay. And, again, not to put words in
10 your mouth, but I'm right that, as a general
11 concept, for futures contract, there's one closing
12 price?

13 A. One settlement price, yeah.

14 Q. Okay. And -- but your model doesn't
15 delineate one closing price?

16 A. No, it does provide one estimate, so the
17 -- the connecting the dots there, the line is drawn
18 between the point estimate on every day.

19 Q. Okay. But that's -- that's a range,
20 right?

21 A. Well, each one of the lines represents a
22 different model, so you can see where two models

1 give two different prices, right, on the same day.

2 Q. Okay. Because different models can yield
3 different prices, right?

4 A. Right.

5 Q. Okay. And so, for example, if I were to
6 ask you, look at 3-A, what was the supply and demand
7 price for the Three Month Contract according to your
8 model on June 11th, could you give me the price?

9 MR. MANNING: Objection, form.

10 THE WITNESS: No, because there was no
11 visible supply or demand. There wasn't -- at least,
12 there wasn't a supply and demand in the marketplace
13 and there was no price discovery in the marketplace.
14 So --

15 BY MR. ULLMAN:

16 Q. Okay.

17 A. -- or at least the only thing we have for
18 price discovery is one bid.

19 Q. Okay.

20 A. And, again, the model uses supply and
21 demand from other markets, so in that sense it -- it
22 represents supply and demand of interest rate

1 sensitive instruments, but, again, they're not
2 exactly the same, which is why you can't simply do a
3 -- in my estimation, you can't just simply do a
4 spread between one market and the other blindly.

5 The modeling, I think, exercise gets at
6 that a little more specifically.

7 Q. Let's go to paragraph 65. It's under
8 header D on page 30.

9 A. Okay.

10 Q. The second sentence here says, you write,
11 "However, the precise results of my valuation
12 analyses are not identical to those of Cont et al.
13 (2011). This is not at all surprising or
14 concerning. Interest rate modeling involves the
15 choice of modeling assumptions and data inputs."

16 Do you see that?

17 A. Yes.

18 Q. Okay. That's -- the read is true and
19 correct to you?

20 A. Yes.

21 Q. Okay. And can you explain a little bit
22 further how the choice of modeling assumptions and

1 data inputs can create different results in a model?

2 A. Sure. Well, first of all, the Cont
3 et al. paper doesn't actually use any data. They
4 use simulated data. So they're not using like live
5 market data. So in that regard, you can make up
6 data and then estimate the model.

7 So it's not surprising that my results
8 are different from theirs because what I did in my
9 estimation was to go out and get market prices from
10 the Eurodollar swaption market -- from the
11 Eurodollar market and then from the swaption market,
12 two different ways of getting real prices from the
13 data.

14 And so, I mean, the differences that I
15 find between my model and theirs almost certainly
16 stem from the fact that I am using live market data.
17 And I think the price changes you see that I trace
18 out in my figures reflect the fact that those prices
19 in the swaption market and the Eurodollar market
20 change from day to day, and then I have reestimated
21 the model on a daily basis.

22 And so even yesterday's price is not

1 exactly -- typically not exactly the same as today's
2 price.

3 Q. I see. Do you have an understanding --
4 and we -- we touched on this before, but I'm not
5 sure I either recall or I got the full answer.

6 Do you have an understanding of -- first
7 of all, do you know, as you sit here today, the
8 names of any DRW traders who placed bids on offer or
9 placed bids on a Three Month Contract?

10 A. Well, I understand there was two traders.
11 Brian --

12 Q. Vander Luitgaren and --

13 A. Yeah, Vander Luitgaren, right. And then
14 I thought the other guy was Brian.

15 Q. Well, it's not a test. I just --

16 A. No.

17 Q. I just wanted to have an example for the
18 record.

19 A. There were two of them that I knew.

20 Q. Okay. Let's talk about -- let's talk
21 about Mr. Vander Luitgaren. Do you have an
22 understanding of how -- what his process was for --

1 for placing bids?

2 A. Process as physically putting the bid up
3 on the exchange?

4 Q. Well, maybe I would say, you know, let's
5 -- start to finish, but let's first of all talk
6 about -- yeah, let's start with give me your sum
7 understanding of mechanically how you would do it
8 and what the bid level was based on.

9 A. Well, I think based on the testimony and
10 the information I have read, they -- to get
11 electronic bids is what we're talking about? To get
12 electronic bids, you need to first have an
13 electronic front entry, order entry system into the
14 exchange so you need to contract with some vendor to
15 actually link into the exchange to post the bids.

16 And any trader, whether they have a model
17 in their mind or a model on their screen, usually
18 generates some sort of valuation of the contract and
19 then takes that valuation, and their job is to trade
20 on that. So they either put in a bid or an offer or
21 sometimes both.

22 If it's more actively traded, they might

1 actually hit somebody else's bid or offer. But
2 that's the mechanics of it or the general -- the
3 general notion of how bids are entered.

4 Q. Okay. But I'm not -- I appreciate that,
5 the general response, the response to the general
6 question, but in terms of Mr. Vander Luitgaren, do
7 you have any idea about the specifics of his process
8 in terms of determining what level of bid to put in?

9 A. No, other than presuming, like I said, he
10 either has a model in his mind or some model on his
11 screen that he translates on to the public exchange
12 where it's visible to other people.

13 Q. Okay. But no hard facts?

14 A. Have I watched him enter orders and
15 stuff? No.

16 Q. Okay. On page 31 under topic 9, this
17 would be under paragraph 66-A, can you look at 68-A
18 and B -- sorry, 66-A and B, please, and look up when
19 you've had a chance to review.

20 A. Okay.

21 Q. First sentence: "DRW bids were placed
22 throughout the trading day and remained posted long

1 enough to potentially attract a counterparty to
2 trade during the settlement period."

3 Do you see that?

4 A. Yes.

5 Q. Is it your understanding that DRW always
6 placed bids throughout the day on the Three Month
7 Contract?

8 A. No. In fact, there were days they didn't
9 bid.

10 Q. Were there days that DRW, for certain
11 maturities, just put in bids during the closing
12 period?

13 A. I can't recall exactly, but I -- it's not
14 -- I presume that could be possible, yes.

15 Q. Okay. Then you write "remained posted
16 long enough to potentially attract a counterparty."

17 Do you see that?

18 A. Yes.

19 Q. What -- what is that opinion based on,
20 that the bids remained posted long enough to
21 potentially attract a counterparty?

22 A. Well, it was based on my analysis of how

1 long the bids were in place and when they were
2 placing them. So the average bid placed during the
3 settlement period was somewhere north of 17 minutes.
4 The settlement period is only 15 minutes long.

5 So, basically, almost the entire
6 settlement period, they were exposed -- they exposed
7 their bids to counterparties.

8 Q. Okay. Are there examples of bids that
9 are placed on a DCM that potentially can't get hit
10 by a counterparty?

11 MR. MANNING: Objection, form.

12 THE WITNESS: There are ways to try to
13 game the system to sort of submit a canceled order
14 microseconds after submitting your bid. You know,
15 high-frequency traders have been accused of that.
16 And so I would say some of that might be suspect,
17 that you put it in for two microseconds and cancel
18 it. That would be a concern. What I've have -- my
19 statements are all about these minutes of exposure.

20 BY MR. ULLMAN:

21 Q. Okay. Okay. Is there -- well, let's
22 take high-frequency trading out of it, but -- and we

1 don't necessarily have -- in terms of bids placed in
2 good faith, in other words, non-spoofing, bids
3 placed in good faith, are those by definition bids
4 that can be hit by another party on a DCM?

5 A. Yeah, by -- I mean, I guess you could get
6 your trade busted, there could be some lobbying
7 after the fact. Yeah, they're executable.

8 Q. Okay.

9 A. You wrote a paper about that back in the
10 mid-'90s about NASDAQ and implementing systems that
11 have executable orders. If you put a bid up or an
12 offer up, then once you get hit, that trade is
13 consummated.

14 Q. Okay, okay. And did DRW's bids ever
15 attract a counterparty?

16 MR. MANNING: Just to be clear, you said
17 that these are the electronic bids during the
18 relevant period?

19 MR. ULLMAN: Um-hum.

20 MR. MANNING: Thank you.

21 THE WITNESS: No, right, so on that
22 basis, their electronic bids --

1 BY MR. ULLMAN:

2 Q. Right.

3 A. -- never got hit on the electronic
4 platform.

5 Q. Okay. What -- in your experience at the
6 CFTC and as an economist, what are the reasons that
7 bids don't get hit?

8 A. Well, I tried to get to some of that in
9 my report, actually. One of the major reasons a bit
10 might not get hit is that it's not high enough.

11 Q. Okay.

12 A. Because -- I mean, you're bidding up and
13 I can come and offer you, you know, 5 dollars for
14 your car but if it's worth 50,000, you're not going
15 to hit my bid, right? So if you're -- you're far
16 enough below the market, you won't get hit.

17 And, of course, if there's no liquidity
18 and if it's -- you know, I guess in these markets,
19 they seem to be fairly broad, the interest rate
20 market and derivative market in particular. There's
21 a large number of traders, but, I mean, I guess if
22 you're bidding somewhere in Tahiti and not linking

1 your computer to anybody except for the island of
2 Tahiti --

3 Q. Yeah.

4 A. -- you might not get hit, right? So
5 there's some notion of dissemination of that bid
6 that matters.

7 Q. Okay. In paragraph B, you write, "DRW
8 bids carried higher rates than those on a
9 non-cleared OTC rate swap, thereby accounting for
10 the presence of the NPV and convexity effects to
11 reflect a value closer to fair market value which
12 would be more likely to attract a counterparty."

13 What's the basis of your conclusion that
14 accounting for the presence of NPV and convexity
15 effects to reflect a value closer to fair market
16 value would be more likely to attract a
17 counterparty?

18 A. Well, any bid above the non-cleared OTC
19 interest rate is a better price for the market. So
20 in that regard, it's more likely to attract a
21 counterparty because you're offering a better price
22 or you're bidding up, willing to pay more in this

1 case, than somebody in the OTC market. So in that
2 regard, it seemed to be an attractive thing to do if
3 you're benchmarking to the OTC price.

4 Q. Any other reason?

5 A. I mean, what I'm coming up with the
6 statement, part of NPV and convexity effect, is
7 based on the fact that I've modeled and estimated
8 what I would consider one estimate of the fair value
9 for that contract. And so that's where that phrase
10 comes in, is that the prices that they're bidding
11 seem to be in the range, again, of what I'm getting
12 for what the convexity and NPV effect would give for
13 the value of that contract.

14 Q. So going back to your testimony about
15 subparagraph B, your testimony is that because the
16 bids were over OTC rates, they were more likely to
17 attract a counterparty. Is that correct?

18 A. Yes.

19 Q. Okay. And you've also testified that
20 none of the electronic bids were hit during the
21 relevant period by a counterparty. Is that correct?

22 A. Yes.

1 Q. And your -- I think, your testimony is
2 that the reason why they weren't hit is because they
3 weren't high enough. Is that right?

4 A. Well, that could be one reason, right.

5 Q. Okay. Do you have any other potential
6 reasons why they weren't hit?

7 A. Well, there could be people that -- on
8 the short side that just didn't like the contract.

9 Q. Um-hum.

10 A. So if something in the contract terms was
11 somehow poisonous or perceived as infeasible.

12 Q. In terms of the prices not being high
13 enough, does that conclusion -- is that conclusion
14 predicated on potential shorts using the same
15 valuation model?

16 A. No, not at all. I mean, you can -- you
17 could come up with any valuation, and as long as you
18 had a valuation that deemed that bid a good value,
19 you would hit the bid.

20 Q. What if -- what if you had a model that
21 disagreed with the central premise of your model,
22 that these effects would result in higher prices?

1 A. Again, I would seem -- then it would seem
2 logical, for me, in profit maximizing mode, if I
3 want to go short, that I would hit the bid and --
4 and be happy about having gotten into that trade at
5 the expense of some ill-informed or wrongly headed
6 counterparty.

7 Q. If you were -- if you spent -- did your
8 -- let's back up for a second.

9 Did your model take into account at all
10 the fact that the bids entered by DRW were never
11 hit? Was that ever a component of your model?

12 A. No. It was -- the model is based on,
13 like I said, the transactions that occur in these
14 other interest rate sensitive securities.

15 Q. Okay. So just to be clear, and I'm
16 sorry, I'm no modeling expert, but your model really
17 has nothing to do with any type of transaction that
18 occurred during the relevant period or before the
19 relevant period on -- regarding the Three Month
20 Contract?

21 MR. MANNING: Objection.

22 THE WITNESS: Right, because there was

1 only one.

2 BY MR. ULLMAN:

3 Q. Right.

4 A. I think we covered that before.

5 Q. Okay. Going down to paragraph 68, please
6 give that a read and look up.

7 A. Okay.

8 Q. Okay. Halfway down the paragraph, you
9 say, "This time period is sufficiently long for
10 potential investors to accept DRW's bids. In fact,
11 the average 17 minutes between bid placement and
12 deletion is an extremely long window of time,
13 reiterating the fact that DRW was ready to trade at
14 posted prices and provided ample opportunity for
15 other investors to trade at these prices as well."

16 Do you have any -- what underpinned your
17 conclusion that this was an extremely long window of
18 time?

19 A. Well, I guess my knowledge of electronic
20 trading and electronic markets.

21 Q. Okay.

22 A. Knowing that if you see a bid and you put

1 in an order, like if within, again, fractions of
2 seconds, that you can hit that bid, and so even if
3 you allow for, you know, a few seconds to assess
4 whether you want to hit the bid or a few minutes to
5 assess the bid, 17 minutes seems like an inordinate
6 amount of time or ample time for someone to view the
7 bid and then to make a decision whether they want to
8 hit it or not.

9 Q. Is that conclusion based on a comparison
10 of other futures markets?

11 A. Well, it's based on my experience with
12 all markets, but, you know, we've analyzed futures
13 markets for high-frequency trading, other features,
14 trading -- electronic trading in both futures and
15 equity markets and markets worldwide.

16 Q. Have you spent time working on illiquid
17 markets or thinly traded markets?

18 A. Well, it's hard to do empirical work on
19 thinly traded because, again, there's not much data
20 there. I have done some work and, in fact, the Eris
21 Exchange probably is the most relevant because it
22 was an exchange that started the contract that was

1 suffering from liquidity at the beginning of the
2 contract. So, I mean, we haven't -- I mean, other
3 than being aware of this and looking at the
4 incentives that markets put forth to try to attract
5 liquidity to the market, it's -- again, it's hard to
6 do an empirical analysis where there's no data.

7 Q. In other words, if -- if you don't have
8 any data that culls the amount of time an average
9 bid is open until it's hit, it's hard to estimate
10 what a either long or short period of the bid to be
11 open to be hit is?

12 A. No, I mean, I have plenty of data. In
13 fact, we know how systems operate, and it's not like
14 I'm sending a horse across the country to send my
15 bid to somebody. The bid is electronically
16 displayed, almost instantaneously, and if you want
17 to hit that bid, it's almost instantaneous to hit
18 it.

19 So, I mean, I guess the time for
20 execution or the exposure that you have is related
21 to the systems that you use and the length of time.
22 Again, if I go back, you know, if -- if there was

1 somebody putting up a bid and canceling it
2 microseconds later, then you might want to question
3 that, but in this case, I don't think it's even
4 debatable that 17 seconds -- 17 minutes is a long
5 time.

6 Q. Um-hum. Okay. Let's go to page 32. And
7 your header, "whether or not a counterparty hit
8 them, DRW's bids were invaluable for, and a
9 legitimate source of price discovery."

10 Do you see that header?

11 A. Yes.

12 Q. Okay. To whom were DRW's bids invaluable
13 for price discovery?

14 A. I think they're valuable to any other
15 trader who's either observing the market or
16 potential trader who wants to trade this contract.
17 I think it was valuable for the clearinghouse that's
18 interested in making sure they have the price right
19 at the end of the day.

20 Q. Was it invaluable to DRW?

21 A. I don't think you could say "invaluable."
22 Clearly, I mean, you know, if the cash flows at the

1 end of the day go in their favor, they get some
2 benefit from that, but that's not -- I mean, you can
3 kind of quantify that.

4 Q. Going to paragraph 72, where it talks
5 about price discovery. You write, "In simple terms
6 price discovery, one of the central tenets of
7 financial markets, is the process of determining the
8 price of an asset, a good or a service."

9 Do you see that?

10 A. Yes.

11 Q. Okay. Can price discovery -- can you
12 accomplish price discovery through the unilateral
13 acts of one market participant in a thinly traded
14 market?

15 A. Yes.

16 Q. How so?

17 A. Well, we just use the facts of this case.
18 There is no bids or offers, so the fact that a
19 participant was willing to put up a bid tells the
20 entire market much more than we knew before the bid
21 went up. If there's no information in the bid or
22 offer and no transactions, then the market is sort

1 of left with total uncertainty about what that
2 contract might be worth.

3 Now, if someone steps up to the plate and
4 puts a bid in, now at least we know on one side of
5 the market what people are willing to buy or sell
6 for, and so that gives a lot of information, I
7 think. You're going from zero to one, you know?
8 Basically, it's 100 percent of the information.

9 Q. Well --

10 A. Impounded in that bid.

11 Q. But in this case, market participants
12 understood that -- well, am I right that market
13 participants understood that with the absence of
14 market activity, the market would settle to
15 over-the-counter comparable rates?

16 MR. MANNING: Objection.

17 THE WITNESS: I mean, if the market
18 assumed that, that doesn't really speak to price
19 discovery, though.

20 BY MR. ULLMAN:

21 Q. Okay. So --

22 A. Because if we believe that, then you

1 would never change any markets. You would never
2 worry about price discovery because it's just going
3 to go back to the over-the-counter market, then it
4 doesn't make any sense to participate in a market
5 that's simply benchmarked to one that's over the
6 counter.

7 Q. Okay. Do you have any specific examples
8 of who discovered DRW's prices?

9 A. Well, the entire market, whoever had a
10 data feed. I don't have a specific example of who
11 subscribed to the data from IDCH or --

12 Q. Okay?

13 A. -- IDCG. We do -- I guess, with one
14 example, we do have it. Apparently, from the MF
15 Global example, they did see the bid, at least we
16 know one participant saw it on the screen. I
17 believe, you know, Jeffries was probably monitoring
18 this market, to the extent that they got out of
19 their contract at some point in time.

20 Q. Can you generalize that do all bids
21 contribute to the price discovery process?

22 A. Yeah, I would say.

1 Q. Okay. And the same -- the same for
2 offers?

3 A. Yeah.

4 Q. Okay. Next sentence where you say,
5 "Finding the proper price involves analysis of
6 supply and demand factors, as well as other factors
7 related to the transaction, the market, and
8 available information."

9 Do you see that?

10 A. Which one was this?

11 Q. I'm sorry, this is in paragraph 72, the
12 second sentence.

13 A. Okay, yes.

14 Q. Okay. Do you see that? And you cite
15 Lehman on that.

16 A. Right.

17 Q. Okay. Are you saying this is a general
18 statement or are you referring to the Three Month
19 Contract in the second sentence of paragraph 72?

20 A. I would say it applies to both.

21 Q. Okay. So -- so what -- what transactions
22 do you believe help find a proper price on the Three

1 Month Contract?

2 A. Well, there were no transactions.

3 Q. Okay.

4 A. So just affording it the opportunity
5 might contribute to price discovery doesn't mean it
6 always does.

7 Q. Okay. And were there factors relating to
8 the market that helped find the proper price of the
9 Three Month Contract?

10 A. Yeah, based on my analysis, the bids were
11 about where I estimated the price to be, so my
12 estimates were coming out of the market for other
13 contracts, interest rate sensitive securities. The
14 market for interest rates generally, I think, were
15 translated into those bids, you know, at least into
16 the prices or near those bids.

17 Q. When did you -- when did you complete
18 your model that's referenced in the report?

19 MR. MANNING: Objection to form.

20 BY MR. ULLMAN:

21 Q. Did you complete your -- did you complete
22 the model before you issued your report on July

1 27th, 2015?

2 A. Yeah, I'm trying to remember the exact
3 first output came out --

4 Q. Okay.

5 A. -- because we did it in two stages.
6 First the model with the swaptions and then we did
7 the model with Eurodollars because we were trying to
8 figure out whether we had enough Eurodollar data.

9 Q. Is it fair to say your model was
10 completed in 2015?

11 A. Oh, yeah, yeah. Sorry.

12 Q. Okay.

13 A. I was trying to be more specific.

14 Q. So in -- what I'm trying to figure out is
15 what did the -- what did the NFX market where the
16 Three -- Three Month Contract was traded, what
17 factors related to the NFX market helped find the
18 proper price?

19 A. Well, like I said, what -- what the
20 models do is take interest rate sensitive
21 securities, the actual transactions for those, and
22 extract out model parameters that basically are

1 forward-looking estimates on a particular day of
2 what other expectations of interest rate dynamics
3 might be.

4 We take those parameters then and put
5 them back into the Three Month Contract and then
6 estimate the point estimate for what the price would
7 be for the Three Month Contract.

8 So the general statement, I guess, would
9 be that the model incorporates forward-looking
10 interest rate expectations into the Three Month
11 Contract.

12 Q. Okay. Let's look at paragraph 75, page
13 34. Please give that a look.

14 A. Okay.

15 Q. In paragraph 75, toward the middle, you
16 write, "Given the fact that no transactions for the
17 Three Month Contract were consummated during the
18 relevant period, DRW's bids were the primary source
19 of price discovery in the Three Month Contract
20 market.

21 "Second, the dissemination of information
22 collected through price discovery also contributes

1 to building investor confidence and maintaining
2 stable financial systems."

3 Do you see that?

4 A. Yes.

5 Q. Okay. Do you believe that DRW's bids
6 placed on the Three Month Contract contributed to
7 building investor confidence?

8 A. Yes.

9 Q. Okay. What facts support that opinion?

10 A. Well, a publicly displayed bid can be
11 hit, so investors who are interested in this
12 particular contract are more confident in the price
13 that they can get for that contract now. Before the
14 bids were out there, they didn't know what price
15 they could get. It was a blank slate.

16 Q. When you -- we discussed earlier the DK'd
17 MF Global trade. Have you looked at any documents,
18 MF Global documents or internal DRW documents, about
19 that transaction?

20 A. I don't recall any internal MF Global
21 documents. What I do recall is there was some
22 controversy about what they were going to settle at

1 and what sizes they were going to execute in the
2 over-the-counter market.

3 Q. Okay.

4 (Deposition Exhibit Number 7 was
5 marked for identification.)

6 MR. ULLMAN: Are we up to 6?

7 THE REPORTER: 7.

8 MR. ULLMAN: 7.

9 BY MR. ULLMAN:

10 Q. Take a minute and look at what has been
11 handed to you as Exhibit 7.

12 A. Okay.

13 Q. Have you seen this document before?

14 A. I don't think so.

15 Q. Okay. Do you know who Laurie Ferber is?

16 A. She worked for MF Global, but I don't
17 know what her capacity was.

18 Q. Okay. If you could, look at the top
19 e-mail on -- what's this? I'm sorry, Exhibit 7? On
20 Exhibit 7.

21 Have you had a chance to look at the top
22 e-mail on Exhibit 7?

1 A. Yes.

2 Q. Okay. If you had seen this
3 exhibit before you finalized your report, would you
4 still conclude that DRW's bids helped build investor
5 confidence?

6 A. Yes.

7 Q. Do you see Ms. Ferber here talking about
8 the serious issue with prices being shown,
9 potentially market manipulation? Do you see that?

10 A. Yeah. I don't know what that refers to,
11 exactly.

12 Q. Okay. Do you know around the time where
13 the -- the DK'd trade occurred between DRW and MF
14 Global?

15 A. February 2nd or so.

16 Q. Okay. Do you see the date of this
17 e-mail?

18 A. Yes.

19 Q. Okay. Do you see when she says at the
20 end, which needs to be addressed for your own best
21 interests and certainly before we do anything with
22 IDCG?

1 A. Yeah, I don't know what she's referring
2 to there, though.

3 Q. Okay. All right. We'll mark this as 8,
4 please.

5 (Deposition Exhibit Number 8 was marked for
6 identification.)

7 BY MR. ULLMAN:

8 Q. Have you seen what has been marked as
9 Exhibit 8 before?

10 A. I don't believe so.

11 Q. Okay. Have you heard any recordings of a
12 conversation between Mr. Wilson and Ms. Ferber?

13 A. No.

14 Q. Okay. I think you testified earlier that
15 maybe you had only met Don Wilson one time. But
16 have you had any communications with Mr. Wilson
17 about this matter?

18 A. No.

19 Q. Okay. Do you see the date on Exhibit 8?

20 A. Yes.

21 Q. And can you read what that is for the
22 record, please?

1 A. It's Friday, February 4th, 2011.

2 Q. Okay. And you understand that to be in
3 proximity to when the broken trade occurred between
4 MF Global and DRW?

5 A. Yeah, two days later, I believe.

6 Q. Okay. Can you look on the bottom of page
7 7. And I would just start at page -- on line 13.
8 And then if you could, just read over to page 8,
9 line 7.

10 A. Okay.

11 Q. Do you recognize what's being referred to
12 in these pages as the Three Month Contract?

13 A. Yes.

14 Q. Okay. And if you had looked at Exhibit 8
15 before you wrote your report, would you still
16 conclude that DRW's bids built investor confidence?

17 MR. MANNING: Objection to form.

18 You can answer.

19 THE WITNESS: Well, I think they -- yeah,
20 they build investor confidence. I'm not -- she
21 obviously wasn't happy with something here.

22 BY MR. ULLMAN:

1 Q. Do you have any -- can you refer to us
2 any scholarly sources for your opinion that -- that
3 unilateral -- the unilateral placement of bids in a
4 thinly traded market can continue to price
5 discovery?

6 A. Well, the -- the cites that I have in the
7 paper, Hasbrouck talks about it, the O'Hara paper
8 talks about it. Price discovery is any piece of
9 information that comes into the market. I think
10 Maureen O'Hara maybe puts it best when she talks
11 about any piece of information might come in new and
12 then makes old information obsolete.

13 So anybody who is -- you know, anybody
14 who is posting a one-sided bid or two-sided bid, for
15 that matter, I mean, they're providing some
16 information to the market that the market otherwise
17 didn't have. And so those papers discuss that.

18 Q. Okay. And those papers correspond to,
19 what I think is your testimony, that all bids
20 contribute to price discovery?

21 A. Right.

22 Q. Okay. On page 35, where you talk about

1 regulators, of your report, I have some general
2 questions on this section.

3 And this is not -- this is since you're
4 talking broadly about policy, my questions on policy
5 reason.

6 What's the basis of -- of your conclusion
7 that regulators should and do promote price
8 discovery?

9 A. Well, drawing from the statement I made
10 from price discovery creating investor confidence,
11 we want to have fair and accurate pricing within
12 markets. I mentioned earlier that the division of
13 clearing and intermediary oversight is an entire
14 division of the regulation here at the CFTC that was
15 interested in making sure the risk to the
16 clearinghouse was appropriate, so they passed the
17 rules, we set up all these mechanisms around the
18 clearinghouse, in particular, to protect the
19 clearinghouse.

20 I think we also -- I mean, the CFTC's
21 words, I guess, here in paragraph 78 were -- I mean,
22 the Commission has put front and center, at least

1 the CFTC, the idea that bids and offers and price
2 discovery are some of the important parts of -- of
3 financial markets, lending credence to capital flows
4 in the economy, and we talk about the broader
5 economy, but that's -- that's the idea. We want to
6 -- futures markets generally are there to transfer
7 risk and to provide hedging opportunities for
8 different market participants. And so the policy
9 implication, I guess, from the entire agency that
10 we're in here is that, is trying to foster fair and
11 effective markets.

12 Q. And in that regard, is it a -- should
13 regulators try to dissuade manipulative activity?

14 A. Oh, definitely.

15 Q. Okay. What about if it's manipulative
16 activity that is also promoting price discovery?
17 Should a regulator -- what does a regulator do then?

18 A. I'm not sure that manipulative behavior
19 would promote price discovery.

20 Q. But I thought you said that every bid
21 contributes to -- to price discovery.

22 A. Yeah, it does. But I guess -- so what

1 results from that bid, I think, would be what the
2 regulator would have to look at, right? So
3 typically, in a minification case, you find out, you
4 know, did you change the price for something and if
5 you're bidding and bidding and bidding up just for
6 the sake of making some money at something, and it's
7 not in your economic interest to do that bidding,
8 that's -- that's a problem.

9 Q. At your time at the CFTC and as an
10 economist, do you know whether market manipulation
11 can be accomplished through consummated trades?

12 A. Oh, yeah.

13 Q. Isn't that most of the time?

14 A. I mean, banging the close and most of
15 these manipulations are you want to push the price
16 somewhere, and to get the price somewhere, you have
17 to somehow do a transaction.

18 Q. In a market manipulation case that
19 involves actual consummated transactions on an
20 Exchange, that involves the actual conference of
21 risk to a party. Is that correct?

22 A. Well, maybe not. I mean, most

1 manipulation cases we have in derivative markets is
2 somebody pushing one market so they have a gain in
3 some other market. And so that's where the
4 economics of the trading in one market don't comport
5 with the overall position. So it might actually be
6 the opposite. So they're not actually taking risk;
7 they are actually moving one market so they benefit,
8 and so the risk is not really conveyed.

9 It might be conveyed in one market, but
10 from the portfolio of the trading strategy, it
11 actually is -- the manipulative part of that
12 actually minimizes risk.

13 Q. Right. So you're referencing what they
14 would call like a cross-exchange manipulation,
15 right?

16 A. Right.

17 Q. Where you lose on A to make on B?

18 A. Which in the derivative markets, I guess,
19 in my experience here and in most places, that's --
20 that's the most common.

21 Q. Yeah. And -- and going back to what you
22 were talking about, cross-exchange manipulation

1 where you lose money on you're a trade but make
2 money on the B trade, on the A trade, since -- since
3 it's an actual consummated transaction and you have
4 an open position, you, at least in theory, have
5 actual risk to the value of that specific position
6 on exchange A?

7 MR. MANNING: Objection to form.

8 THE WITNESS: I think you have -- you
9 could incur losses, right? So if you're
10 artificially pushing prices up, you know, supply and
11 demand dictate that it should have been lower,
12 you're going to lose money on those trades. So in
13 that regard, there's risk, yes.

14 BY MR. ULLMAN:

15 Q. Okay. Going back -- I'm not trying to be
16 sarcastic, but I just want to make sure the record
17 is straight. You're not an attorney; is that
18 correct?

19 A. No.

20 Q. Okay. You never -- you don't hold
21 yourself out as someone who can provide a legal
22 opinion?

1 A. No, not as an attorney, no.

2 Q. Okay. We've been going for about an
3 hour. Why don't we just go off the record a minute.

4 THE VIDEO OPERATOR: Going on the record.
5 The time is now 14:54.

6 (A recess was taken at 2:55 p.m., after which
7 the deposition resumed at 3:02 p.m.)

8 THE VIDEO OPERATOR: We are back on the
9 record. The time is now 15:02.

10 BY MR. ULLMAN:

11 Q. If you could, please turn to page 43 of
12 your report. And if you could, please review
13 paragraph 93 and then look up when you've had a
14 chance to review this.

15 A. Okay.

16 Q. Okay. Two-thirds of the way down the
17 paragraph, you write, "IDCH subsequently provided a
18 list of third-party vendors that can facilitate
19 DRW's transmission of bids directly into an
20 electronic platform."

21 And you cite this at -- you cite footnote
22 86 for an e-mail on December 20th, 2010. Do you see

1 that?

2 A. Yes.

3 Q. Okay. The next sentence here, you write,
4 "These actions by IDCH hardly suggest DRW's bids
5 were at an artificial price but rather suggest that
6 it was encouraging DRW to engage in price discovery,
7 i.e., encouraging DRW to contribute electronic
8 quotes as a legitimate source of supply or demand
9 for the Three Month Contract."

10 Do you see that?

11 A. Yes.

12 Q. Okay. And I think your paragraph 93
13 indicates that -- that the list of vendors to
14 facilitate the DRW's transmissions of bids through
15 the electronic platform by definition occurred
16 before DRW started putting in bids via the
17 electronic platform. Is that correct?

18 A. Yes.

19 Q. Okay. So when you write here that the
20 actions that IDCH hardly suggest that DRW's bids
21 were at an artificial price, that isn't supported by
22 the factual record in this matter; is that correct?

1 MR. MANNING: Objection to form.

2 THE WITNESS: This is the statement that
3 those actions don't speak to the artificial prices.

4 BY MR. ULLMAN:

5 Q. Okay. But you understand that this is
6 before the relevant period, right?

7 A. Right.

8 Q. Okay. And, you know, I'm not trying to
9 be sarcastic, but IDCH can't see into the future of
10 what DRW is going to do once it has a direct
11 electronic platform connection?

12 A. Right.

13 Q. Okay. If you could, turn to paragraph --
14 I'm interested in pages 44 through 49, with a
15 specific emphasis on -- on paragraph 98 or, sorry,
16 99. Have you had a chance to look at paragraph 99?

17 A. Yes.

18 Q. Okay. You write, "Based on my estimates
19 DRW's bids, while higher than the corresponding
20 rates, were largely lower than the fair value
21 rates."

22 Do you see that sentence?

1 A. Yes.

2 Q. Okay. What do you mean by fair value
3 rates?

4 A. That would be a benchmark to the rates
5 that I estimated from my models.

6 Q. Okay. And that -- would that be -- are
7 the fair value rates synonymous with non-artificial
8 prices?

9 A. Yeah, I would say the prices I would get
10 out of my model would be valid for disseminating to
11 the market.

12 Q. Okay. And your model shows that -- that
13 DRW's bids were never at the fair value rate; is
14 that correct?

15 A. Well, there might have been instances
16 where they corresponded exactly with what my -- my
17 model came up with. In fact, my two models come up
18 with two different prices on the same day.

19 Q. Right. But you write here that they were
20 largely lower than the fair value rates. Is that --
21 do you stand by that?

22 A. Yes.

1 Q. Okay. Okay. Look at paragraph 102,
2 please. Continue to read and when you've had the
3 chance, please look up.

4 A. Okay.

5 Q. I think this is what we were talking
6 about a little bit earlier, about Gupta and the
7 evolution of the incorporation of convexity and NPV
8 effect into the Eurodollars futures pricing. Is
9 that fair to say?

10 A. Yes.

11 Q. Okay. In the last sentence, you said,
12 you write, "Just as in the Three Month Contract,
13 eventually the market learned."

14 Do you see that sentence?

15 A. Yes.

16 Q. Okay. What do you mean by that?

17 A. Well, the market being market
18 participants and entities who were engaged with this
19 particular contract. In my estimation, one of the
20 participants, DRW, incorporated that information
21 into their bids.

22 I think the record was that Jeffries has

1 had some statements saying in the event we didn't
2 know that convexity was priced in before and now we
3 know, so they made the statement -- when they
4 entered into the transaction with DRW, they made
5 some statement that now they know in 2011, that that
6 should have been priced.

7 Is there other evidence? I guess maybe
8 even to my estimation, the lack of transaction
9 suggested that the market didn't -- didn't trust the
10 prices, and so there was some uncertainty about what
11 the value was.

12 Q. And -- and what prices are you referring
13 to, DRW's prices?

14 A. Well, all the prices that were being
15 disseminated. But the only prices that we had for
16 this particular contract were DRW's bids.

17 Q. Going back to that sentence, you
18 testified earlier that DRW, during the relevant
19 period, was placing bids higher than the
20 corresponding rates and that resulted in higher
21 settlement prices on various tenors of the Three
22 Month Contract during the relevant period.

1 Is that a fair summary of your testimony?

2 A. Yeah, I think that's a conviction.

3 Q. Okay. So DRW enters these bids, they're
4 not hit, the price changes, and then your testimony
5 is that the market discovered those prices. Is that
6 fair?

7 A. Yes.

8 Q. Okay. What was your dissertation about?

9 A. Interday patterns and bid ask spreads.

10 Q. Thank God. Is the -- is part of being an
11 economist understanding what rational economic
12 actors do?

13 A. I mean, you could use rationality as a
14 benchmark for testing things or you could use -- so
15 rationality comes into play in a lot of economic
16 contexts. I'm not sure -- there are people who
17 study irrationality as an economist.

18 Q. Does -- does -- again, not a quiz, but
19 does rationality have a meaning in economics?

20 A. Well, it's one of those terms that's
21 difficult to assess, right? So there's critiques of
22 certain papers that -- that assume rationality or

1 they assume some sort of pattern of behavior that
2 someone deems rational and that other people take
3 exception to.

4 Q. Um-hum. Do you have a definition of what
5 rationality means?

6 A. Well, I mean, in manipulation cases,
7 typically, I guess, as a chief economist, we'd try
8 to -- in investigations that we supported and other
9 things we did here in the building, was to try to
10 figure out were the actions rational and were they
11 -- do they comport with someone who had an economic
12 incentive that was not abusive to other traders. It
13 was, you know, participating fairly. So an
14 on-the-spot, no offense, definition of rationality
15 or not.

16 Q. I know you testified earlier that you
17 didn't look at the final settlement prices for the
18 Three Month Contract. But you did look at DRW's
19 bidding rates throughout the relevant period, right?

20 MR. MANNING: Objection to form.

21 THE WITNESS: Oh, I did look at the final
22 settlement prices, yeah, because they were pretty

1 much identical to the -- to the DRW bids.

2 BY MR. ULLMAN:

3 Q. Okay. And based on your modeling, the
4 bids that DRW were putting in were beneath where
5 your model shows fair value is; is that fair?

6 A. For the most part, yes.

7 Q. For the most part. There are
8 exceptions --

9 A. Right.

10 Q. -- but as a general rule. And I guess
11 the question goes back to rationality. Is that --
12 if you're -- is that a rational -- assuming your
13 model is correct, okay, and -- is that a rational
14 way of bidding if you want to establish a long
15 position?

16 A. Well, it's certainly a rational way of
17 bidding. So, certainly, would never want to bid
18 over your estimates or else you'd be overpaying for
19 something. Yeah, and so I think -- so I think
20 that's what a bid and an offer usually are. There's
21 usually some midpoint assumed true price, and people
22 bid below that, and people offer above that, with

1 the expectation maybe you're going to find someone
2 in the range of that uncertainty that disagrees with
3 you and consummate a trade.

4 So there is -- I guess there's some
5 evidence in the DRW bidding behavior that suggests
6 rationality, that -- at least in -- some of the
7 tenors, they started bidding a little bit above
8 over-the-counter rates and they moved that up. And
9 to me, that does indicate some bit of rationality,
10 maybe searching for -- hypothetically, of course,
11 searching for the counterparty and not wanting to
12 overbid.

13 Q. When economists analyze rationality and
14 market behavior, do they take into account, I guess
15 what you would commonly call a course of conduct? I
16 mean, would you look -- if, say, the behavior
17 occurred over 100 days. Would you look at the days
18 before day 100 or is that impossible to say?

19 A. Yeah, I'm not sure what the context would
20 be.

21 Q. Okay. Well, I guess the context would
22 be -- and I'm just wondering -- I don't think you

1 have an opinion on this, but I just want to
2 double-check.

3 That if -- according to you, not all
4 these bids are consistently or generally under where
5 you perceive fair value to be. And that continues.
6 Day one, you do that and then your bids are hit.
7 Day two, you do that; none of your bids are hit.
8 Day three, you do that and none of your bids are
9 hit. Day four -- I don't remember specifically how
10 many days we have, but let's just say we have over
11 110 days of that, right?

12 And on day 110, do you have an opinion
13 whether that behavior is rational?

14 A. Well, I mean, I think this is what we
15 faced in the Eris Exchange too. The exchange is
16 trying to encourage people to stay onboard and
17 provide liquidity. Yeah, it might be rational to
18 try -- if you think that there is a market for
19 future gains, then you might want to incur -- I
20 mean, if it's a small cost and you've invested in
21 the front-end systems and you think that generating
22 liquidity or generating transactions in the future

1 might lead to offsetting investment that you've made
2 in the past, that might be rational.

3 Q. If you could, please turn to page 50,
4 under section D, paragraph 111. If you could look
5 at 11 and look up when you've had a second.

6 A. Okay.

7 Q. What types of analysis did you do to
8 reach the conclusions in paragraph 111?

9 A. Well, the analysis that I had was over
10 the length of time of this contract. We estimated
11 what the convexity and net present value effects
12 would be. As I mentioned before, the convexity
13 effect is determined by the volatility. And whether
14 we start trading at 10 and jumping around 10, or we
15 start trading at 12 and there's volatility around
16 12, there's still value in the convexity effect.

17 Q. Did you look at any actual P&L when you
18 were -- in your conclusions in paragraph 111?

19 A. I guess the only background I have in
20 profits would be the fact that Jeffries closed out
21 their transaction.

22 Q. Okay.

1 A. In August, and so the empirical fact that
2 they paid to get out of this contract suggested, and
3 I think their own admission suggested, they
4 recognized the convexity effect was there and that
5 they were willing to pay to get out of the position
6 so they didn't face the long-term consequences.

7 Q. Okay. But --

8 A. So they made the present value payment of
9 what they thought they might lose in the future.

10 Q. Okay. But just in response to my
11 question, did you look at any real-world P&L data
12 from the Three Month Contract in reaching your
13 conclusions?

14 A. No, that's why I said it's the only --
15 the only data I had was that one transaction that
16 was reversed.

17 Q. Okay. And do you know why or how -- what
18 precipitated Jeffries unwinding its position with
19 DRW?

20 A. I don't know specifics. I do know that
21 they admitted that they -- as I recall, they
22 admitted that they understood that the convexity

1 effect was going to be something that happened as
2 interest rates varied looking forward through the
3 life of the contract; they made some assessment they
4 didn't want the exposure that they had in their
5 position. So they negotiated some sort of present
6 value of what they deemed the appropriate value of
7 those future payments that they might have to make.

8 Q. Do you know if it had anything to do with
9 a legal settlement between DRW and Jeffries?

10 A. No. I wasn't -- I don't think I was
11 aware of any legal settlement that precipitated the
12 unwinding.

13 Q. And it looks here that you read
14 Mr. Bury's deposition, footnote 96 on paragraph 113?

15 A. Yes.

16 Q. Okay. In his deposition, Mr. Bury
17 references strange pricing and marking behavior. Do
18 you recall that from his deposition?

19 MR. MANNING: Objection.

20 THE WITNESS: No, not that particular
21 phrase.

22 BY MR. ULLMAN:

1 Q. You don't recall it?

2 A. No, I don't recall it.

3 Q. Okay. Do you know what the IDCH curve
4 interpolator is?

5 A. Sounds like a product.

6 Q. It does sound like a product. Do you
7 know the document, what the curve interpolator is?

8 A. No.

9 Q. Okay. Have you looked at any end-of-day
10 reports issued by IDCH to New Edge in this case?

11 A. I don't think so.

12 Q. Okay. And do you have any idea what the
13 curve interpolator is?

14 A. No, I'm not familiar with the phrase, no.

15 Q. Okay.

16 MR. MANNING: Can I just ask for
17 clarification? If the curve interpolator is not,
18 you know, the Bates name that identifies the
19 document in the litigation, there may be a more
20 helpful way for the witness to idea the document
21 you're asking about.

22 BY MR. ULLMAN:

1 Q. Yeah, we're going to get to it. Did you
2 ever see a document that compared, for certain
3 tenors, different columns of what the OTC rate was
4 and what DRW's bid was and the resulting end-of-day
5 price?

6 A. Well, we have -- we have spreadsheets of
7 that, that generated some of the figures that I
8 have. So we have DRW's bids. We have closing
9 prices and we have my estimates of what the value of
10 those contracts are. So --

11 Q. I'm going to show it to you, but I just
12 wanted --

13 A. So they were all in there.

14 Q. This is an internal IDCH document. Do
15 you remember seeing it?

16 A. I think that's where we got the -- well,
17 I'm not -- I'm not sure where we got the data, to
18 tell you the truth.

19 Q. Okay.

20 MR. ULLMAN: Can you mark this, please.

21 THE REPORTER: This is Number 9.

22 (Deposition Exhibit Number 9 was marked for

1 identification.)

2 MR. MANNING: Do you have a copy you
3 could share with us?

4 MS. SIDDIQUI: Yes.

5 BY MR. ULLMAN:

6 Q. I'm getting it.

7 MR. MANNING: I thought you were about to
8 ask a question. I apologize.

9 BY MR. ULLMAN:

10 Q. I don't have a lot on this document. I
11 just want to -- and it's not Bates stamped because
12 it came in native form, but I want to show it to
13 you.

14 Do you recognize what this document is?

15 A. Not really, no.

16 Q. Okay. Have you ever seen any documents
17 similar to this relative to this case?

18 A. I don't believe so.

19 Q. Okay. Okay. Moving to paragraph 121, in
20 the last sentence, you say, "However, we can
21 rationally conduct a thought experiment to ascertain
22 whether DRW's bids might have created an artificial

1 price."

2 Do you see that?

3 A. Yes.

4 Q. How do you describe this -- what's a
5 thought experiment?

6 A. Well, I walk through it in the next two
7 paragraphs.

8 Q. Okay.

9 A. Would you like me to describe that?

10 Q. Well, I guess in general, what's a -- is
11 this your thought experiment?

12 A. It's an experiment that's -- it's an
13 observation of -- that anybody could do.

14 Q. Okay.

15 A. But it's my logic behind what I document
16 in the next two paragraphs.

17 Q. Okay. When you said -- when you
18 testified that anyone could do it, what did you mean
19 by that?

20 A. Well, it's a series of logical
21 connections.

22 Q. Okay. If you could look at paragraph

1 133, please. If you could read it and then look up.

2 MR. MANNING: I don't mean to be
3 difficult, but the version that I was given actually
4 skips from page -- from paragraph 132 to 135. That
5 doesn't seem to be a problem on the witness' copy.

6 MR. ULLMAN: I found a trick. These guys
7 are good.

8 MR. MANNING: As long as the exhibit --

9 MR. ULLMAN: Do you have another one?

10 MR. MANNING: It's fine.

11 MS. SIDDIQUI: Is he --

12 MR. MANNING: Okay. It's fine.

13 MR. ULLMAN: Are you sure? We have an
14 extra.

15 MR. MANNING: Yeah, this copy here is
16 good.

17 MR. ULLMAN: Thanks.

18 MR. MANNING: Thank you.

19 BY MR. ULLMAN:

20 Q. Okay. So in the middle of the paragraph,
21 you say, "No short directly took the opposite side
22 of DRW's bid, suggesting that the 'collective

1 action' was only to withhold trades because the
2 compensation offered by DRW was not high enough,
3 (not far away from the corresponding rates)."

4 Do you see that?

5 A. Yes.

6 Q. Okay. Were there -- do you believe there
7 are any -- there were any other potential reasons
8 why DRW's bids were not hit?

9 A. I mean, there may be. I can't -- I can't
10 think of any.

11 Q. Okay. Did you analyze any other
12 potential reasons?

13 A. No, since I can't think of any, no, I
14 didn't analyze any.

15 Q. Okay. Why don't we just take a
16 two-minute break off the record, and I'll be right
17 back.

18 THE VIDEO OPERATOR: Going on of the
19 record. The time is now 15:29.

20 (A recess was taken at 3:29 p.m., after which
21 the deposition resumed at 3:36 p.m.)

22 THE VIDEO OPERATOR: We are back on the

1 record. The time is now 15:36.

2 BY MR. ULLMAN:

3 Q. Plaintiff has no further questions at
4 this time. Thank you, Mr. Harris.

5 A. Thank you.

6 MR. MANNING: Counsel for defendants will
7 just ask a few short clarifying questions.

8 EXAMINATION BY COUNSEL FOR DEFENDANTS

9 BY MR. MANNING:

10 Q. Dr. Harris, you testified earlier that
11 you believed that all bids contribute to price
12 discovery. Is that correct?

13 A. Yes.

14 Q. Does that -- does it necessarily follow
15 from -- from that statement that you believe a
16 clearinghouse or Exchange should necessarily
17 incorporate all bids into its settlement -- into
18 their settlement price determinations?

19 A. I think the -- I mean, the clearinghouses
20 have rules set up on what they take in the
21 settlement period and what information they
22 incorporate in. And they have the discretion of --

1 if they don't deem the bid to be appropriate, I
2 think that would be fair game for a clearinghouse to
3 exclude.

4 Q. Okay. And, Dr. Harris, you testified
5 earlier -- when discussing your experience analyzing
6 thinly traded products, you testified to the effect
7 that it's hard to do empirical analysis without
8 data. What types of analysis were you referring to
9 in that testimony?

10 A. Well, I mean, if you wanted to do some
11 study of liquidity in a market where there is no
12 trading, there wouldn't be much of anything there to
13 study because liquidity is usually based on some
14 sort of volumetric and things that we talked about.

15 So those types of analysis that rely on
16 specific data to the market, you know, if you're
17 trying to estimate bid on spreads and there's no ask
18 but only a bid, you're limited in, in the data
19 availability in thinly-traded markets.

20 Q. But those types of analyses are separate
21 from, say, evaluation of the thinly-traded product
22 at issue?

1 A. Yeah. So, I mean, so what I did in this
2 case, there wasn't any or very -- there was very
3 little data from the market itself. So, right, so
4 the valuation exercise we did, I guess, by
5 definition looks to outside markets to interpolate
6 what the effective prices would be in that market.

7 My statement was more along the lines of
8 analyzing that market, and not, you know, like I
9 said, bid/ask spreads or behavior, whatever, in that
10 marketplace.

11 Q. Thank you.

12 MR. MANNING: That's all we have.

13 MR. ULLMAN: Nothing further. Thank you
14 for your time.

15 THE VIDEO OPERATOR: Going off the
16 record. The time is now 15:39.

17 THE REPORTER: Can counsel please state
18 their orders on the record or let me know if they
19 have a standing order with Alderson?

20 MR. ULLMAN: We're going to both ask for
21 roughs, right?

22 MR. MANNING: Yes, roughs and rush.

1 THE REPORTER: So you want the final
2 tomorrow?

3 MR. ULLMAN: Yes.

4 (Signature having not been waived, the
5 deposition of Jeffrey Harris was adjourned at 3:39
6 p.m.)

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1 Notice Date: 09/03/2015
Deposition Date: 09/02/2015
2 Deponent: JEFFREY H. HARRIS
Case Name: CFTC v. Donald R. Wilson and DRW
3 Investments LLC.

4 Page:Line Now Reads Should Read

| | | | |
|----|--|--|--|
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |
| 16 | | | |
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1 CERTIFICATE OF DEPONENT

2 I hereby certify that I have read and examined the
3 foregoing transcript, and the same is a true and
4 accurate record of the testimony given by me.

5 Any additions or corrections that I feel are
6 necessary, I will attach on a separate sheet of
7 paper to the original transcript.

8
9 _____
10 Signature of Deponent

11
12 I hereby certify that the individual representing
13 himself/herself to be the above-named individual,
14 appeared before me this ____ day of _____,
15 2015, and executed the above certificate in my
16 presence.

17 _____
18 NOTARY PUBLIC IN AND FOR

19
20 _____
21 County Name

22 MY COMMISSION EXPIRES:

1 CERTIFICATE OF SHORTHAND REPORTER

2 I, Karen K. Brynteson, the officer before whom
3 the foregoing proceedings were taken, do hereby
4 certify that the witness was duly sworn by me
5 pursuant to stipulation of counsel and that I was
6 authorized to and did report said proceedings.

7 I further certify that the foregoing transcript
8 is a true and correct record of the proceedings;
9 that said proceedings were taken by me
10 stenographically and thereafter reduced to
11 typewriting under my supervision; and that I am
12 neither counsel for, related to, nor employed by any
13 of the parties to this case and have no interest,
14 financial or otherwise, in its outcome.

15 IN WITNESS WHEREOF, I have hereunto set my hand
16 this 2nd day of September, 2015.

17
18
19
20 _____
21 KAREN K. BRYNTESON, RPR, RMR, CRR, FAPR

22 Notary Public

Transcript Word Index

[& - 40]

| | | | |
|--------------------------|----------------------------|----------------------------|-----------------------------|
| & | 11th | 1990 | 25 |
| & | 123:12 124:12 138:8 | 127:17 | 42:20 49:21 121:18,20 |
| 3:16 4:6 7:6,9 | 12 | 2 | 25,000 |
| 0 | 21:5 185:15,16 | 2 | 20:3,17 |
| 09/02/2015 | 12,500 | 1:17 4:7 5:10,18 10:15,16 | 26 |
| 198:1 | 19:21 20:20 | 10:19 11:5 | 76:9,12 |
| 09/03/2015 | 12:56 | 2:04 | 27th |
| 198:1 | 129:18,19 | 130:2 | 11:16 161:1 |
| 1 | 121 | 2:55 | 29 |
| 1 | 190:19 | 174:6 | 60:10 79:10 |
| 1 | 13 | 20 | 29th |
| 5:9 6:3 9:19,22 10:5 | 167:7 | 49:21 58:18 100:11 111:4,5 | 110:3,8 |
| 1:00 | 130 | 2000 | 2nd |
| 129:15 | 5:4 | 108:7 | 6:10 165:15 200:16 |
| 1:54 | 132 | 2010 | 3 |
| 118:17 | 192:4 | 5:16 29:12,17 52:22 69:3 | 3 |
| 10 | 133 | 69:11,19 70:10,11 72:3,14 | 5:12 11:9,10 17:13 30:5,7,7 |
| 5:11 17:15,16 21:5 49:21 | 192:1 | 72:21 73:3 75:12 79:1 87:4 | 30:8,11 130:7 135:14 138:6 |
| 185:14,14 | 135 | 98:4 100:7 115:20 118:17 | 3:02 |
| 10:00 | 192:4 | 121:14,17 133:13,17 | 174:7 |
| 1:18 | 13-7884 | 174:22 | 3:29 |
| 10:03 | 1:8 6:9 | 2011 | 193:20 |
| 6:2,11 | 14 | 5:18,21 18:12,22 19:14,22 | 3:36 |
| 10:40 | 42:18 43:1 60:5,6 61:9 | 20:1,4,5 21:16 35:19,19 | 193:21 |
| 40:2,3 | 65:19 | 53:12 68:20 75:2,8 78:17 | 3:39 |
| 10:48 | 14:04 | 122:19 124:2 139:13 167:1 | 197:5 |
| 40:4,6 | 130:4 | 179:5 | 30 |
| 100 | 14:54 | 2012 | 49:21 60:10 85:17 139:8 |
| 59:22 60:11 76:20 157:8 | 174:5 | 110:3,8 | 305-967-6107 |
| 183:17,18 | 15 | 2013 | 4:10 |
| 100,000 | 43:1 111:4 145:4 | 20:20 | 31 |
| 65:9 | 15:02 | 2014 | 42:20 143:16 |
| 1002 | 174:9 | 20:20 | 312-542-1145 |
| 5:13 76:10 | 15:29 | 2015 | 4:18 |
| 10022 | 193:19 | 1:17 6:10 20:20 161:1,10 | 32 |
| 3:18 | 15:36 | 199:15 200:16 | 80:21 155:6 |
| 102 | 194:1 | 202-418-5420 | 33131 |
| 178:1 | 15:39 | 3:10 | 4:9 |
| 109 | 196:16 | 20581 | 34 |
| 5:15 | 16 | 2:7 3:9 6:13 | 80:21 162:13 |
| 11 | 43:2 79:11 | 20th | 35 |
| 5:12 185:5 | 164 | 174:22 | 95:3,3,5 168:22 |
| 11:40 | 5:19 | 21 | 35th |
| 80:12,13 | 166 | 110:3,13,17 111:4 | 4:8 |
| 11:53 | 5:21 | 212-488-1277 | 39 |
| 80:14,16 | 17 | 3:19 | 95:4,7 |
| 110 | 46:13,18 58:6 80:19 135:15 | 21st | 3941 |
| 184:11,12 | 145:3 152:11 153:5 155:4,4 | 2:6 3:8 6:12 | 8:3 |
| 111 | 18 | 22 | 4 |
| 185:4,8,18 | 46:13 | 110:3,14,17 | 4 |
| 113 | 189 | 23 | 5:13,21 59:14,16,22 60:12 |
| 187:14 | 5:22 | 5:16 135:15 | 76:20 118:22 |
| 1155 | 18th | 23rd | 40 |
| 2:6 3:8 6:12 | 31:20 | 118:17 | 126:22 |
| 118 | 19 | 24th | |
| 5:17 | 46:14 | 53:11 | |

[41 - allocations]

| | | | |
|---|---|--|--|
| 41 101:15 103:10 | 70 21:9,11 | acceptable 120:6 136:15 | addressed 165:20 |
| 42 106:7,8,12 | 72 156:4 159:11,19 | accomplish 156:12 | adds 16:7 |
| 43 95:5 106:8 107:12 174:11 | 75 162:12,15 | accomplished 122:3 171:11 | adjourned 197:5 |
| 44 108:20 109:1 112:17 176:14 | 78 169:21 | account 14:16 66:1 73:21 127:7 151:9 183:14 | adjustment 101:20 103:18 106:13,20 107:7 109:3 111:6 112:6,13 |
| 45 110:2,11 | <hr/> 8 5:20 166:3,5,9,19 167:8,14 | accounted 101:22 102:12,15 103:18 | administer 7:13 |
| 46 113:8 | 800 3:17 | accounting 103:9,11,12 148:9,14 | admission 186:3 |
| 47 114:19 119:16 | 86 174:22 | accounts 14:18 | admitted 186:21,22 |
| 49 176:14 | <hr/> 9 | accretion 117:16 | admonishment 11:1 |
| 4th 167:1 | 9 5:9,22 46:11 143:16 189:21 189:22 | accrues 99:21 101:2 | adopted 85:2 |
| <hr/> 5 | 90s 146:10 | accurate 37:21 90:3 169:11 199:4 | advantageous 99:20 |
| 5 5:14 109:16,18,21 110:1,7 147:13 | 93 174:13 175:12 | accurately 47:4 | affect 71:7 78:2 88:3 117:2 |
| 50 185:3 | 95 125:11 | accused 145:15 | affording 160:4 |
| 50,000 147:14 | 96 187:14 | acknowledgement 5:10 | afternoon 5:4 130:1 |
| 540 4:16 | 98 176:15 | acronym 22:21 62:19 | agency 170:9 |
| 57 130:10 | 99 125:12 176:16,16 | acronyms 22:20 | ago 8:15 |
| 58 134:17,18 135:6 | <hr/> a | action 193:1 | agree 15:21 39:19 46:17 64:17 66:5 94:7,8 102:5 125:2 |
| 59 5:13 134:18 | a.m. 1:18 6:2 40:3,4 80:13,14 | actions 175:4,20 176:3 181:10 | agreed 117:17 |
| <hr/> 6 | ability 38:1,7,8 39:12,15,18 | active 85:14 | agreement 23:22 |
| 6 5:16 118:2,4,8 164:6 | able 74:10 81:19 89:14 98:17 115:6 | actively 128:14 142:22 | ahead 25:13 32:1 90:16 126:22 |
| 60 21:9,10 | absence 115:22 157:13 | activity 69:15 76:3 93:9 115:22 157:14 170:13,16 | ahhs 9:4 |
| 60661-2555 4:17 | abusing 101:1 | actors 180:12 | al 5:19 79:13 88:11 127:22 139:12 140:3 |
| 60934 1:21 | abusive 181:12 | acts 156:13 | alderson 6:16 196:19 |
| 65 139:7 | academic 16:13 28:20 29:4,14 42:6 90:9 | actual 32:17 64:16 68:9 93:13 114:5 115:1 128:4,7 130:17 130:20 161:21 171:19,20 173:3,5 185:17 | alignment 111:5 |
| 66 143:17,18 | academics 29:1 | additions 199:5 | allegations 35:5 105:14 106:1 |
| 68 143:17 152:5 | academy 2:17 | address 8:2 | allocated 14:17 |
| <hr/> 7 | accept 12:16 152:10 | | allocations 14:14 |
| 7 5:3,18 164:4,7,8,11,19,20 164:22 167:7,9 | | | |

[allow - basis]

| | | | |
|--|--|---|---|
| allow 135:21 153:3 | appeared 11:19,21 13:18 41:18 199:14 | assess 153:3,5 180:21 | available 81:7 159:8 |
| alter 116:16 | appearing 34:22 | assessment 187:3 | avenue 3:17 32:4,5 |
| altered 107:4 117:22 | appears 11:15,18 84:20 87:6 110:7 110:12 | asset 45:15 156:8 | average 49:17 54:2 81:18 145:2 152:11 154:8 |
| amount 55:10 89:12 132:11 153:6 154:8 | application 129:12 | assist 31:12 | aware 57:2,12 58:2 68:18 69:5 88:22 91:1,15 92:18 107:1 109:3 112:5,12 122:19 154:3 187:11 |
| amounted 51:21 | applied 29:15 | assistance 30:20 | <hr/> b <hr/> |
| ample 152:14 153:6 | applies 77:20 159:20 | assistant 33:3 | |
| analyses 41:13 139:12 195:20 | apply 115:3 | assisted 30:22 | back 17:14 26:6 29:17 40:5,8 46:10 49:4 60:22 62:14 70:9 73:10,11 75:16 76:9 77:5 80:15,18 87:4,8 117:17 127:17 130:3,6 132:15,15 133:8,9 146:9 149:14 151:8 154:22 158:3 162:5 172:21 173:15 174:8 179:17 182:11 193:17,22 |
| analysis 31:2,7,13 33:10 40:9,12,15 40:19 41:1 42:12,16 68:1,4 122:3 144:22 154:6 159:5 160:10 185:7,9 195:7,8,15 | applying 77:1,8,21 | associated 58:11 | backed 12:20 13:4 |
| analyze 183:13 193:11,14 | appreciate 143:4 | association 28:17,19 29:4 | background 16:14 185:19 |
| analyzed 153:12 | approached 126:10 | assume 180:22 181:1 | backgrounds 16:13 |
| analyzing 132:18 195:5 196:8 | appropriate 44:19 55:19 76:16 87:5 115:3 119:21 169:16 187:6 195:1 | assumed 157:18 182:21 | balance 48:11 |
| andrew 4:5 7:9 | approve 41:3 | assuming 182:12 | banging 171:14 |
| andrew.lourie 4:11 | approximately 12:3 81:15 | assumption 45:13 | bankrupt 47:17 |
| angle 16:17 | aptly 54:13 | assumptions 34:3,5 139:15,22 | bargain 120:7 |
| anne 33:12 | arbitration 12:5,14 | attach 199:6 | barrels 65:8,9 |
| answer 9:3 34:12 36:8 38:15 57:6 71:10 89:5 134:8 141:5 167:18 | arrived 114:8 | attended 36:13 | based 16:12,15 20:19 44:16 48:22 72:13 73:4 74:4 75:14 82:17 83:15 84:7 86:15 87:1 89:9 90:6 93:13 95:5 99:9 119:21 122:5 142:8,9 144:19,22 149:7 151:12 153:9,11 160:10 176:18 182:3 195:13 |
| answers 38:19 | articles 33:4 | attention 17:18 59:19 | basic 47:8 |
| anybody 39:17 88:10,13 116:6 148:1 168:13,13 191:13 | artificial 35:10 38:4,9,12 39:6,8,18 39:20 43:8,9,10,17,22 44:5 44:13,14,15 45:5,18 46:8 175:5,21 176:3 177:7 190:22 | attorney 173:17 174:1 | basically 18:3,6 23:6,8,12 71:22 145:5 157:8 161:22 |
| anyway 67:20 119:13 132:4 | artificiality 45:9,22 46:3 | attract 144:1,16,21 146:15 148:12 148:16,20 149:17 154:4 | basis 55:9 57:19 82:13 126:21 135:15 140:21 146:22 |
| apologize 32:11 190:8 | artificially 173:10 | attracted 88:20 | |
| apparent 84:8 | ascertain 190:21 | attractive 29:10 149:2 | |
| apparently 158:14 | asking 15:13 33:20 38:16 39:4 42:10 45:21 54:9 55:8 57:8 | attributable 99:4 | |
| appear 70:12 | appearances 94:5 112:9 117:3 130:9 188:21 | august 35:19 79:1 108:6,7 122:12 133:12,17 186:1 | |
| | | author 122:18 | |
| | | authorized 200:6 | |
| | | availability 195:19 | |

[basis - case]

| | | | |
|---|---|---|---|
| basis (cont.) 148:13 169:6 | beyond 98:4 | bit 62:1 74:1 127:1 139:21 147:9 178:6 183:7,9 | built 167:16 |
| bates 188:18 190:11 | bias 83:3 119:2,9 126:21 128:16 | blank 163:15 | bury 187:16 |
| beginning 6:18 87:21 100:3 154:1 | biased 119:4,12 | blindly 139:4 | bury's 187:14 |
| begins 6:3 | bid 45:13 66:19 67:1 77:3,10 77:15 88:15 89:13,13,15 90:8,11 91:16 92:5,13 94:17 105:3,9,19 107:19 123:6 124:1,1 136:12 138:18 142:2,8,20 143:1,8 144:9 145:2,14 146:11 147:15 148:5,18 150:18,19 151:3 152:11,22 153:2,4,5 153:7 154:9,10,15,15,17 155:1 156:19,20,21 157:4 157:10 158:15 163:10 168:14,14 170:20 171:1 180:9 182:17,20,22 189:4 192:22 195:1,17,18 196:9 | board 18:11,16 24:10 27:6,6,22 28:8,11 49:10 | business 18:4 20:11 30:2 |
| behalf 3:3,14 4:4 6:16,22 7:3,7,10 | | bob 36:2 | busted 146:6 |
| behavior 38:5 39:7 93:18 127:5 170:18 181:1 183:5,14,16 184:13 187:17 196:9 | | bond 47:11 | buy 97:1 120:19 157:5 |
| belabor 78:21 111:15 | | book 54:7 59:21 60:15 | buyers 63:9 |
| believe 12:2,13 14:5 15:3 18:8,21 20:7 21:21 25:6 26:9 27:20 31:15 33:16 34:5,18 38:3 41:4 42:3,4 43:10 44:19 50:21 53:7 56:5 57:9 68:14 69:9 79:20 82:21 83:9,14 83:17 84:17 99:17 105:8 109:11 113:2 120:21 123:22 128:1 157:22 158:17 159:22 163:5 166:10 167:5 190:18 193:6 194:15 | bidding 39:7 88:18 124:8,9 147:12 147:22 148:22 149:10 171:5,5,5,7 181:19 182:14 182:17 183:5,7 | boston 119:19 120:4 | buying 17:4 94:16 96:8 105:5 |
| believed 68:4 194:11 | bids 35:6 68:20,22 69:6 72:3 86:7,8,16 87:7,13 88:14,21 89:9 90:7 91:12 92:16 94:12 104:19,20 107:16 108:3,16 113:11,16,17,18 115:1 122:10,20 125:5 126:4,8,9,13 128:19 129:3 129:8 135:3,9,20 141:8,9 142:1,11,12,15 143:3,21 144:6,11,20 145:1,7,8 146:1,2,3,14,17,22 147:7 148:8 149:16,20 151:10 152:10 155:8,12 156:18 158:20 160:10,15,16 162:18 163:5,14 165:4 167:16 168:3,19 170:1 174:19 175:4,14,16,20 176:19 177:13 178:21 179:16,19 180:3 182:1,4 184:4,6,7,8 189:8 190:22 193:8 194:11,17 | bought 120:3 | c |
| benchmark 177:4 180:14 | | boulevard 4:7 | calculate 115:7 |
| benchmarked 100:20 121:16 158:5 | | break 9:7,9 39:22 80:10 95:6 99:3 193:16 | calculated 60:13 |
| benchmarking 149:3 | | brian 141:11,14 | calculating 57:3 58:4 |
| beneath 182:4 | | briefly 40:9 | calculations 107:18 |
| benefit 35:9 59:5,8 73:18 74:9 95:11 97:12,20,22 98:10,11 98:15,18,19,21 99:13,14,18 100:16 101:3 106:15 109:5 126:14 127:15 156:2 172:7 | | broad 147:19 | calibrates 130:19 |
| benefits 59:9,9 72:17,18 99:9 | | broaden 29:7 | calibration 130:10,12,19 131:14,15 |
| benefitted 97:22 98:3 99:19 | | broader 28:9 170:4 | call 25:22 27:6,7,8 75:10 133:2 172:14 183:15 |
| benefitting 100:8 | big 84:11 101:12 | broadly 169:4 | called 13:21 35:17 49:13 84:18 |
| best 132:5 165:20 168:10 | bigger 56:22,22 | broken 167:3 | calls 36:6 |
| better 37:6 85:3 118:3 148:19,21 | biscayne 4:7 | broker 53:6 91:17,21 | cancel 145:17 |
| | | brynteson 1:22 2:14 6:14 200:2,21 | canceled 145:13 |
| | | b's 63:18 | canceling 155:1 |
| | | build 165:4 167:20 | capacity 17:8 27:12,14,17 39:19 164:17 |
| | | building 163:1,7 181:9 | capital 39:17 170:3 |
| | | | car 147:14 |
| | | | carried 148:8 |
| | | | case 1:7 6:8 8:14 11:2 12:5,14 12:16,19,22 14:2,4 15:16 20:8 21:7,10 22:4,18 30:2 32:17 34:4 35:12 37:6,11 |

[case - concludes]

| | | | |
|----------------------------|-----------------------------|------------------------------|--------------------------|
| case (cont.) | changes | clearinghouse (cont.) | communications |
| 37:16,20 40:22 41:7 81:12 | 47:5 69:21 75:14 91:8 | 107:10 114:17 116:9,16 | 166:16 |
| 82:11 116:14 117:16,20,21 | 100:15 126:18 140:17 | 155:17 169:16,18,19 | company |
| 122:2 132:16 149:1 155:3 | 180:4 | 194:16 195:2 | 24:14,18 25:5,18 26:1,2 |
| 156:17 157:11 171:3,18 | characteristic | clearinghouses | comparable |
| 188:10 190:17 196:2 198:2 | 104:2 | 62:13,15,18 114:7 115:6 | 157:15 |
| 200:13 | characteristics | 194:19 | compared |
| cases | 63:13 64:4,16 71:6 82:19 | clearly | 189:2 |
| 11:19 12:4 13:8 61:16 | 104:5 | 155:22 | comparison |
| 172:1 181:6 | characterized | clears | 153:9 |
| cash | 22:8 | 18:5 23:19,21 | comparisons |
| 20:11 47:1 48:8 58:7,14,21 | chart | close | 68:6 |
| 73:8,14 81:14,17,19 82:6 | 5:22 | 105:5 171:14 | compelling |
| 96:10,14 100:16 101:13 | charts | closed | 84:4 |
| 103:5,22 106:2 109:4 | 31:5 32:22 40:21 | 185:20 | compensate |
| 155:22 | check | closer | 103:3 109:4 |
| catherine | 184:2 | 148:11,15 | compensated |
| 33:12 | chicago | closing | 19:16 |
| center | 4:17 18:1 | 68:1,6,8,9 70:6,10,12 86:2 | compensation |
| 169:22 | chief | 137:11,15 144:11 189:8 | 19:19 20:14 111:13 193:2 |
| central | 21:19,20 181:7 | cme | competitor |
| 56:13 118:17,17 150:21 | choice | 18:6 23:18,19 24:1,4 63:5,6 | 23:17,18 24:4 |
| 156:6 | 127:20 139:15,22 | coded | complete |
| ceo | chose | 32:17 | 160:17,21,21 |
| 109:2 | 65:22 108:15 111:3 | collateral | completed |
| certain | cite | 111:7,12 112:15 | 161:10 |
| 40:9 42:3 136:1,1 144:10 | 60:7 76:10,19 93:1 110:2 | collect | completely |
| 180:22 189:2 | 112:9 159:14 174:21,21 | 40:19 55:19 | 24:13 |
| certainly | cited | collected | compliance |
| 64:20 88:10 121:12 140:15 | 88:11 110:13 111:21 | 162:22 | 5:11 11:1 |
| 165:21 182:16,17 | cites | collective | component |
| certificate | 112:16 168:6 | 192:22 | 24:11 86:20 132:22 133:1 |
| 65:17 199:1,15 200:1 | citing | columns | 151:11 |
| certifications | 110:11 112:3 | 189:3 | components |
| 16:18,19 | clarification | combination | 67:19 70:13,15 133:22 |
| certified | 188:17 | 91:7 | comport |
| 2:16 | clarifying | comfortable | 172:4 181:11 |
| certify | 194:7 | 128:3 | comported |
| 199:2,12 200:4,7 | clarity's | coming | 127:4 |
| cftc | 25:22 | 37:3 125:9 149:5 160:12 | composed |
| 8:13 14:2 29:11 62:17 | classification | commission | 34:8 |
| 113:2 117:10,14,21 147:6 | 62:18 | 1:6 2:5 3:7 6:6,21 7:2,5 | computer |
| 169:14 170:1 171:9 198:2 | clear | 14:10 169:22 199:22 | 148:1 |
| cftc.gov | 75:8 78:21 146:16 151:15 | commissioners | concept |
| 3:11 | cleared | 22:1 | 54:15 137:11 |
| cftc's | 58:17 73:20,20 81:6,11 | committee | concern |
| 169:20 | 82:22 101:22 114:6 119:17 | 19:9,10,11,12 | 31:14 145:18 |
| chain | 148:9,18 | committees | concerned |
| 5:18 118:16 | clearing | 19:5,8,13 | 50:22 56:15 |
| chance | 62:21 116:16 169:13 | commodity | concerning |
| 9:20 43:2 101:16 118:9 | clearinghouse | 1:5 2:5 3:7 6:5,21 7:1,4 | 139:14 |
| 143:19 164:21 174:14 | 23:6,6,13 24:3 47:3,3,11,15 | 14:9 45:15 63:20 65:2 | conclude |
| 176:16 178:3 | 47:18 48:6,10 54:16,20 | common | 165:4 167:16 |
| change | 55:11 56:3,14,14 57:2,18 | 172:20 | concludes |
| 55:16 56:15 116:18 132:13 | 58:3 61:11,17,21 62:2,8 | commonly | 84:6 |
| 140:20 158:1 171:4 | 63:12,16,18,18 70:3 72:5 | 183:15 | |

[conclusion - court]

| | | | |
|--|---|---|---|
| conclusion 132:3 148:13 150:13,13 152:17 153:9 169:6 | cont 79:13 88:11 127:21 139:12 140:2 | contracts (cont.) 67:21 71:7,8 77:2,9 78:19 82:8 85:15 88:2 91:5 120:18 121:15 128:14 131:8 132:20 134:3 136:8 136:10 160:13 189:10 | correct (cont.) 44:2 45:6,10 46:4,19 52:12 59:12 60:8 63:3 69:10,21 70:20 71:2 109:17 111:10 130:14 136:9 139:19 149:17,21 171:21 173:18 175:17,22 177:14 182:13 194:12 200:8 |
| conclusions 185:8,18 186:13 | contained 37:13 39:11 46:18 | contract's 87:15 104:11 | corrections 199:5 |
| concurrent 131:15 | context 39:8 66:10 102:7 183:19,21 | contractual 23:22 | correcting 31:11 |
| concurrently 126:17 | contexts 180:16 | contribute 158:21 160:5 168:20 175:7 194:11 | correspond 168:18 |
| conditions 115:20 131:16 132:9 | continue 168:4 178:2 | contributed 93:19 163:6 | corresponded 126:5 177:16 |
| conduct 183:15 190:21 | continued 4:2 | contributes 93:9 162:22 170:21 | corresponding 31:12 89:15 105:10,20 109:7 110:22 111:18 112:7 112:8 113:9 114:21 115:2 116:2 123:4 124:22 126:5 176:19 179:20 193:3 |
| conference 27:7 171:20 | continues 184:5 | control 38:20 | cosmetic 33:7 |
| conferences 28:21 | contract 18:7 22:9,9 35:8 39:13 47:5 48:6,14,15,19 49:6 50:10 50:20 52:7,21 53:3,5,9,18 58:12,13,14,15,20 59:3,21 60:14,20 61:6 63:16,19 64:2,5,8,15,17 65:8,21 66:2 66:9,12,13,14,16,20,22 67:7,12 68:2,5,15 69:6,12 70:2,7 72:8 73:7 74:8 75:5 75:6,22 77:15 78:4,7,11,13 79:4,6 81:10,11,13,15,16 81:22 82:4,6,16,21 85:6,11 86:3,12,15 87:2 88:8 94:6 95:12 96:8 97:13,15,18 98:7,14,16,20 99:1,6,16 100:4 101:20,21 103:2,6,13 104:5,10,21 105:4,10,20 106:5,22 107:4,6,8 108:4 109:7 110:22 111:3,18 112:7 113:4,5,10,13 114:2 114:12,14,22 115:13 116:1 116:10,18 117:6,8,18,21 118:1 119:2,17 120:13,20 121:1,5,8,13 122:22 124:18 128:15 130:18 131:3,5,21 132:6,7,9 134:10,12 135:1 135:17 136:21 137:11 138:7 141:9 142:14,18 144:7 149:9,13 150:8,10 151:20 153:22 154:2 155:16 157:2 158:19 159:19 160:1,9 161:16 162:5,7,11,17,19 163:6,12 163:13 167:12 175:9 178:12,19 179:16,22 181:18 185:10 186:2,12 187:3 | controversy 163:22 | cost 111:6,11 112:14 184:20 |
| confident 41:9 125:11,12 163:12 | converted 131:8 | conversation 5:21 166:12 | counsel 6:17 7:11,18 15:7,17 21:21 33:18 34:3,12,16 36:10 194:6,8 196:17 200:5,12 |
| confidential 11:3 | convexity 67:22 71:2,16,18 72:18 73:4 74:14 75:19 79:17 82:10,11 83:3,3,5,9,15,20 84:1,8,12,13 86:22 87:1,10 89:5,9 95:10,16 96:5,5 97:11,21 98:5 99:4,9,13,15 99:21 102:2,14 103:7 104:9 106:14,15,21 107:18,21 108:13 119:2,4,9,12 122:13 124:5,14 125:15,17 126:21 128:15,19 133:6 135:2,17 148:10,14 149:6,12 178:7 179:2 185:11,12,16 186:4 186:22 | conversations 15:7,16 41:14 | counter 68:16 75:16 86:18,19 87:8 90:3 91:17 114:1,4 121:15 132:20 157:15 158:3,6 164:2 183:8 |
| confirm 11:6 38:8 119:2 | conveyed 172:8,9 | converted 131:8 | counteract 103:15 106:13,21 107:3 |
| connect 51:19 | conveying 28:10 | conviction 180:2 | counterpart 101:22 119:18 |
| connecting 137:17 | convince 107:2 | conviction 180:2 | counterparties 62:11 89:1 145:7 |
| connection 22:11 176:11 | copy 11:17 190:2 192:5,15 | conviction 180:2 | counterparty 23:8,12 47:14 48:12 144:1 144:16,21 145:10 146:15 148:12,17,21 149:17,21 151:6 155:7 183:11 |
| connections 191:21 | corporation 24:6 | conviction 180:2 | country 154:14 |
| consequences 186:6 | correct 11:17 18:10 43:14,17,19 | conviction 180:2 | county 199:21 |
| consider 149:8 | | | course 19:6 36:7 81:21 101:11 147:17 183:10,15 |
| considered 70:18 77:14 | | | court 1:1 6:8,14,16 7:12 8:21 9:3 12:4,7 |
| consistently 135:2,9 184:4 | | | |
| constructed 128:18 | | | |
| consulting 31:8 | | | |
| consummate 183:3 | | | |
| consummated 69:8 90:12,17,18 91:13,14 92:16 93:5,16 131:2 132:6 146:13 162:17 171:11,19 173:3 | | | |
| consummating 94:1 | | | |

[covered - determining]

| | | | |
|--|--|---|--|
| covered 152:4 | data (cont.) 189:17 195:8,16,18 196:3 | deems 181:2 | depend 126:18 |
| cox 127:13 | date 6:10 80:5 165:16 166:19 198:1,1 | default 12:21,21 47:12 75:16 113:9 113:22 114:3 | depending 51:9 65:1 |
| create 38:9 39:18,19 51:18 68:14 72:21 74:14 140:1 | dated 11:16 | defaulted 69:15 70:14 | depends 71:15,17 72:18 85:7 132:8 |
| created 39:8 44:14 78:22 90:7 190:22 | daubert 13:20 14:20 | defaulting 86:18 87:7,8 | depleted 47:16 |
| creates 74:7 | day 8:18 47:2,5 48:3,5,7,9,18 49:1,17,19 51:1 52:11,12 54:3 55:17 56:7,16 57:11 57:20 58:5 67:13 73:17 92:6 101:7,14,14 105:19 123:14 128:14 131:17,20 132:1,13,14 136:1,10 137:18 138:1 140:20,20 143:22 144:6 155:19 156:1 162:1 177:18 183:18 184:6 184:7,8,9,12 188:9 189:4 199:14 200:16 | defaults 23:10 | deponent 198:2 199:1,10 |
| creating 35:10 169:10 | | defendants 1:11 3:14 4:4 7:7,10 15:12 34:3 35:12 37:19 127:2 194:6,8 | deposition 1:14 2:1 5:8,14 6:4,11,19 8:5,9 9:22 10:10,16 11:10 14:2 15:5 22:19 35:18,21 36:1,14 40:4 59:16 80:14 109:18 110:2 118:4 164:4 166:5 174:7 187:14,16,18 189:22 193:21 197:5 198:1 |
| creation 64:16 | | defense 15:4 | depositions 8:17 |
| credence 170:3 | | define 35:18 75:11 | derivative 13:5 23:5 147:20 172:1,18 |
| credit 12:20,21 61:19 | | defining 22:19 | derivatives 12:19 13:3 17:11 18:4 22:7 |
| criticized 13:15 | daylight 118:18 | definitely 170:14 | describe 10:7,21 11:14 43:6,8 55:1 61:12 91:4 191:4,9 |
| critiques 180:21 | days 144:8,10 167:5 183:17,17 184:10,11 | definition 45:17,18,22 46:8,17 59:11 66:21 86:17 87:9 93:20 146:3 175:15 181:4,14 196:5 | described 48:14 54:13 103:10,14 |
| cross 172:14,22 | day's 52:1,2,3 | definitions 46:18 | describing 74:3 94:20 |
| crr 1:22 200:21 | dcio 62:20 | degree 42:6 | description 129:8 |
| culls 154:8 | dcm 145:9 146:4 | delaware 29:15 | design 63:2,12 |
| cumulative 111:7,11 112:14 | deal 13:9 | deletion 152:12 | designated 18:7 62:16 |
| currently 23:15 31:9 37:15 | dealings 30:3 | delineate 58:19 137:15 | designed 63:16 66:1 |
| curve 49:22 51:14,18,20 71:16 95:19,20,22 128:1 188:3,7 188:13,17 | deals 58:9 | delineated 127:7 | designs 63:6 |
| customers 14:16 | dealt 13:2 | delivered 65:3 | despite 119:3 |
| d | debatable 155:4 | delivery 64:22 65:7,18 | details 53:16 |
| d.c. 1:16 2:7 3:9 6:12 8:4 | december 69:3,19 72:14 73:3 75:1,8 75:12 100:11 174:22 | delta 133:2 | determinations 194:18 |
| daily 55:9 60:1 76:11,14 82:13 104:9 135:1 140:21 | decision 153:7 | demand 43:11,13 44:2,3,11 45:19 97:1 107:20 108:12 113:12 113:20 114:5,11 120:14 121:10,13 138:6,11,12,21 138:22 159:6 173:11 175:8 | determine 48:11 55:10 60:19 61:5 114:7 115:7 135:22 |
| dan 6:20 | declaration 5:10 | demand 108:16 | determined 48:5 54:2 185:13 |
| daniel 3:4 | deem 84:21 195:1 | demonstrate 84:5 | determines 104:14 |
| data 31:5,5 34:15,16 40:18 85:21 122:6 128:4,7 130:16 139:15 140:1,3,4,5,6,13,16 153:19 154:6,8,12 158:10 158:11 161:8 186:11,15 | deemed 76:15,15 132:19 136:15 150:18 187:6 | | determining 136:18 137:7 143:8 156:7 |

[detroit - dynamics]

| | | | |
|--|---|---|--|
| detroit 119:20 120:4,8 | directly 13:10 39:15 78:9 174:19 | disseminated 179:15 | drawing 169:9 |
| detroit's 119:22 | 192:21 | disseminating 80:2 177:10 | drawn 137:17 |
| development 83:18 | director 17:19 18:10,19 19:4,16 | dissemination 61:15 124:12 148:5 162:21 | driven 16:15 |
| dichotomous 62:4 | 21:2,13,17 24:11 26:2 27:1 | dissertation 180:8 | drw 1:9 4:15 6:6 7:8,11 26:5,6,7 |
| dictate 173:11 | 27:14,18 | dissimilar 127:11 | 26:10,13 27:19,21 28:14 |
| dictates 48:8 | directors 18:11,16 20:12 28:1,11 | dissuade 170:13 | 30:3 35:5,15 39:11,19 52:5 |
| differ 120:15 121:11 | directorship 27:13 | distinction 77:12 102:15 | 53:4 55:4 68:20 69:5 72:2 |
| differed 92:11 | disagree 16:1 116:9 | distinctions 65:10 83:15 | 78:3,5,9,12,16,22 79:3,8 |
| difference 22:8 67:20 68:14 70:5,18 | disagreed 16:3 150:21 | district 1:1,2 6:7,8 | 86:6,12,16 97:14,20 98:21 |
| 72:8,13 75:5 101:21 109:6 | disagrees 183:2 | division 62:20,21 169:12,14 | 99:10,14 101:4,5,7 105:3,9 |
| 110:21 111:9,12 112:6,15 | disciplinary 21:7 | dk'd 91:18 92:11,15 163:16 | 106:4 108:3 115:11,21 |
| 121:6,8 133:3,5 | disclose 15:6 | 165:13 | 116:2 118:22 122:8,20 |
| differences 22:13 73:4 74:8,15,20 82:5 | discovered 158:8 180:5 | document 118:12 164:13 188:7,19,20 | 123:6,22 124:21 125:5 |
| 82:17 86:12,14 93:3,11 | discovery 16:15 93:7,10,19 104:18 | 189:2,14 190:10,14 191:15 | 127:22 133:8,11 141:8 |
| 111:17 120:12,22 121:2 | 138:13,18 155:9,13 156:5,6 | documented 84:20 | 143:21 144:5,10 148:7 |
| 132:19 140:14 | 156:11,12 157:19 158:2,21 | documents 34:14 60:6 163:17,18,18,21 | 151:10 152:13 155:20 |
| different 12:3 14:18 16:16 19:5 | 160:5 162:19,22 168:5,8,20 | 190:16 | 163:18 165:13 167:4 175:6 |
| 45:14,16 49:22 55:13 62:1 | 169:8,10 170:2,16,19,21 | doing 40:16 122:16 123:15 124:7 | 175:7,16 176:10 178:20 |
| 63:17 64:1,3,3,22 65:1,5,12 | 175:6 194:12 | 126:11 129:1 | 179:4,18 180:3 182:1,4 |
| 92:4 104:4 113:7 114:1 | discretion 76:14 77:1,8,13 194:22 | dollars 147:13 | 183:5 186:19 187:9 193:2 |
| 119:18 120:17,18 136:13 | discuss 27:15,18 39:5 61:10 93:7 | don 25:6 26:20 35:15 118:16 | 198:2 |
| 137:22 138:1,2,3 140:1,8 | 168:17 | 166:15 | drwholdings.com 4:19 |
| 140:12 170:8 177:18 189:3 | discussed 15:11 122:17 163:16 | donald 1:9 6:6 7:7 14:10 198:2 | drw's 38:1 39:7 53:22 56:6 57:10 |
| differential 82:22 87:6 111:14 | discusses 38:12 39:7 54:11 | dots 51:19 137:17 | 69:19 78:6 87:7,13 88:14 |
| differentials 64:11 84:7 87:1 89:8 93:12 | discussing 46:3 74:3 195:5 | double 21:16 184:2 | 89:9 90:7,15 91:12 92:16 |
| 94:22 96:22 | discussions 28:9 | downward 95:20 | 104:19,20 107:16,17 |
| differentiate 113:6 | disjunctive 43:14 | dr 194:10 195:4 | 113:17 125:20 126:3 127:8 |
| differently 16:4,8,10 74:1 | disk 6:3 | drafted 30:16,21 | 128:19 129:2,8 135:3,9,20 |
| differs 65:21 67:7,14 | displayed 128:8 154:16 163:10 | drafting 53:15 68:3 | 146:14 152:10 155:8,12 |
| difficult 85:20 180:21 192:3 | displeased 117:9 | draw 17:18 | 158:8 162:18 163:5 165:4 |
| dig 33:4 | dispute 12:6,19 14:17 | | 167:16 174:19 175:4,14,20 |
| direct 59:19 89:11 176:10 | disqualified 13:11 | | 176:19 177:13 179:13,16 |
| directed 32:14 40:14,20 41:9 122:4 | | | 181:18 189:4,8 190:22 |
| direction 32:20 | | | 192:22 193:8 |
| | | | due 65:21 |
| | | | dufresne 33:11,15 |
| | | | dullman 3:11 |
| | | | duly 7:16 200:4 |
| | | | duties 19:4 |
| | | | dynamic 74:7 |
| | | | dynamics 68:14 162:2 |

[earlier - exchange]

| e | either | entities | eurodollar |
|----------------------------|----------------------------|----------------------------|----------------------------|
| earlier | 39:10 45:17 47:12 55:10 | 178:18 | 82:18 83:8,9,16 84:16 85:5 |
| 7:21 30:13 43:7 72:1 81:13 | 77:15 83:22 131:10,13 | entity | 85:16,22 93:2,13 94:6,11 |
| 82:2 97:14 133:10,11 | 141:5 142:20 143:10 | 28:10 47:16 55:18 62:14,22 | 94:20 140:10,11,19 161:8 |
| 163:16 166:14 169:12 | 154:10 155:15 | entry | eurodollars |
| 178:6 179:18 181:16 | elaborate | 142:13,13 | 85:10,15 87:19 161:7 178:8 |
| 194:10 195:5 | 113:21 | enunciate | evaluated |
| early | electronic | 78:18 | 56:6 |
| 29:12 78:17 81:19 82:12 | 90:7,15 91:12 92:16 115:1 | enunciation | evaluating |
| 98:8 | 122:20 124:1 142:11,12,13 | 79:16 | 57:10 |
| economic | 146:17,22 147:3 149:20 | environment | evaluation |
| 44:4 45:2 46:7 104:11,14 | 152:19,20 153:14 174:20 | 71:12 | 195:21 |
| 105:1 119:18 120:12,22 | 175:7,15,17 176:11 | equity | evans |
| 171:7 180:11,15 181:11 | electronically | 25:14 153:15 | 14:22 15:16 16:10 |
| economics | 86:16 108:3,5 125:1 154:15 | eric | event |
| 133:2 172:4 180:19 | else's | 33:11 42:4 | 179:1 |
| economist | 143:1 | eric's | eventually |
| 21:19 36:16,16 117:11 | emphasis | 33:14 | 178:13 |
| 147:6 171:10 180:11,17 | 176:15 | eris | evidence |
| 181:7 | empirical | 17:22 18:1,16,19 19:4,17 | 26:13 123:21 179:7 183:5 |
| economists | 84:18,19 85:19 122:6 | 19:20 21:2,18,21 22:2,10 | evolution |
| 183:13 | 153:18 154:6 186:1 195:7 | 23:17,19,21 24:5,7,11,15 | 83:20 84:11,15 93:1,4,12 |
| economy | employed | 24:16,18 25:4,17,20 26:2,3 | 94:10,19 178:7 |
| 170:4,5 | 31:10 122:9 200:12 | 26:11,14 27:1,15,18 28:1,5 | evolved |
| edge | employees | 28:7,9 102:22 103:4,21 | 93:18 |
| 188:10 | 27:22 28:13 42:15 78:17 | 104:2 153:20 184:15 | exact |
| editing | 122:3 124:13 125:8 | esq | 25:19 94:14 104:21,22 |
| 33:5 | emulate | 3:4,5,6,15 4:5,14 | 161:2 |
| effect | 129:2 | establish | exactly |
| 67:21,22 71:2,2,15,16,18 | encourage | 51:11 114:4 182:14 | 136:6 139:2 141:1,1 144:13 |
| 71:19,21 72:18 73:5 74:13 | 184:16 | established | 165:11 177:16 |
| 74:14 81:4,12,18 82:4,7,14 | encouraging | 51:11 52:20 104:17 117:18 | examination |
| 82:17,19,21 83:6,9,15,20 | 175:6,7 | establishing | 7:18 194:8 |
| 84:1,8,12,14 86:2,7,15,22 | ended | 76:14 | examined |
| 87:1,10,13 88:9 89:5,9 | 92:11 | estate | 7:16 199:2 |
| 94:21 95:20 96:5,5 97:21 | ends | 119:21 120:5 | example |
| 98:5,5,6,13,22 99:9,12,13 | 81:21 111:3 | estimate | 62:12 63:6,21 73:13 82:15 |
| 99:15 103:8 105:17,18 | engage | 32:16 61:19 70:10 96:7,9 | 106:14 116:15 138:5 |
| 124:5,14 125:15,18 128:20 | 175:6 | 122:5 133:6 136:2,5 137:16 | 141:17 158:10,14,15 |
| 128:20 149:6,12 178:8 | engaged | 137:18 140:6 149:8 154:9 | examples |
| 185:13,16 186:4 187:1 | 178:18 | 162:6,6 195:17 | 145:8 158:7 |
| 195:6 | engagement | estimated | exceeded |
| effective | 30:2 | 149:7 160:11 177:5 185:10 | 72:22 |
| 170:11 196:6 | enter | estimates | exception |
| effects | 66:13 97:8 117:6 143:14 | 135:1,15 160:12 162:1 | 181:3 |
| 75:19 79:17 83:3,5 93:2 | entered | 176:18 182:18 189:9 | exceptions |
| 95:10,16 97:11 102:2,14 | 78:3,10,14 79:6 98:1 99:20 | estimating | 182:8 |
| 103:1 104:9 106:14,15,21 | 115:13,17 116:2 143:3 | 131:19 | excerpt |
| 107:18,21 108:13 122:13 | 151:10 179:4 | estimation | 5:14 59:20 110:1 |
| 133:6 135:2,17 148:10,15 | entering | 41:7 79:16 88:14 98:2 99:6 | exchange |
| 150:22 185:11 | 118:1 | 114:13,15 126:19 127:3 | 17:22 18:1,1 19:4,7,10,10 |
| efficiency | enters | 139:3 140:9 178:19 179:8 | 19:17,20 21:2 22:6 23:21 |
| 62:17 | 180:3 | et | 24:5,8,11,15 26:3 27:2,15 |
| eight | entire | 5:19 79:13 88:11 127:22 | 27:18 28:1,7 48:2 49:7,9 |
| 12:3 13:7 108:8 122:14 | 46:2 145:5 156:20 158:9 | 139:12 140:3 | 50:11 61:11,13,15,22 62:3 |
| | 169:13 170:9 | | 62:7 63:11,16,17,18 65:22 |

[exchange - firm]

| | | | |
|-----------------------------|-----------------------------|----------------------------|----------------------------|
| exchange (cont.) | experience | facilitated | feature |
| 67:13 69:15 102:22 103:15 | 42:6 117:10 147:5 153:11 | 47:2 | 109:4 |
| 103:21 107:3,9 114:2 | 172:19 195:5 | facing | features |
| 117:14 131:7 133:12 142:3 | experiences | 22:3 | 64:2 126:18 153:13 |
| 142:14,15 143:11 153:21 | 22:7 | fact | february |
| 153:22 171:20 172:14,22 | experiment | 65:16 93:17 104:19,20 | 5:18,21 29:12 54:1 110:3,8 |
| 173:6 184:15,15 194:16 | 190:21 191:5,11,12 | 107:19 108:14 109:3 112:5 | 122:19 124:2 165:15 167:1 |
| exchanged | expert | 114:20 119:3 129:7 140:16 | feed |
| 47:2 58:15 70:2 72:4,21 | 5:12 8:10 11:15,20 12:1,3,9 | 140:18 144:8 146:7 149:7 | 158:10 |
| 101:2 | 12:12,16 13:8,12,15,19 | 151:10 152:10,13 153:20 | feedback |
| exchanges | 15:3 30:14,16 36:17 151:16 | 154:13 156:18 162:16 | 33:5 |
| 61:17 62:13 63:2 137:6 | expires | 177:17 185:20 186:1 | feel |
| exclude | 199:22 | factor | 199:5 |
| 13:17 195:3 | explain | 122:5 127:11 | fees |
| exclusion | 23:3 46:21 48:1 81:3 | factors | 20:12 |
| 13:20 | 112:22 139:21 | 70:18 159:6,6 160:7 161:17 | fellow |
| excuse | explained | facts | 2:16 |
| 97:2 | 71:19 | 34:14,16 38:6,7 123:21 | ferber |
| executable | explains | 125:9 143:13 156:17 163:9 | 5:19,20 164:15 165:7 |
| 136:15 146:7,11 | 111:2 | factual | 166:12 |
| execute | explanation | 34:2,5 175:22 | field |
| 164:1 | 90:4 | failure | 29:2 103:12 |
| executed | exposed | 63:8 64:8 | figure |
| 134:4 199:15 | 44:21 145:6,6 | fair | 51:14 67:6 123:22 132:16 |
| execution | exposure | 54:17 55:1 63:13 71:8 | 161:8,14 181:10 |
| 154:20 | 145:19 154:20 187:4 | 76:15,16 87:12 113:12 | figures |
| executions | expressed | 114:11,12 115:14 123:4 | 140:18 189:7 |
| 44:22 | 124:18 | 126:6 128:20 129:9 132:19 | filed |
| exercise | expressly | 133:18 137:8 148:11,15 | 13:17 |
| 126:15 127:17 139:5 196:4 | 76:13 | 149:8 161:9 169:11 170:10 | final |
| exhibit | extended | 176:20 177:2,7,13,20 178:9 | 103:21 181:17,21 197:1 |
| 5:8,9,10,12,13,14,16,18,20 | 29:16 | 180:1,6 182:5,5 184:5 | finalized |
| 5:22 9:19,22 10:5,15,16,19 | extent | 195:2 | 165:3 |
| 11:9,10 17:13,15 30:5,7,7,8 | 22:20 36:5,9 37:5 38:16 | fairly | finance |
| 30:11 59:16,22 60:12 76:20 | 46:2 56:9 74:18 78:1 86:6 | 78:18 84:4 85:13 94:9 | 28:17,19 29:2 |
| 109:18 110:1,7 118:4,8 | 98:1 158:18 | 147:19 181:13 | financial |
| 130:7 135:10,14 164:4,11 | extra | faith | 17:2 54:15 99:8 132:13 |
| 164:19,20,22 165:3 166:5,9 | 96:14 192:14 | 146:2,3 | 156:7 163:2 170:3 200:14 |
| 166:19 167:14 189:22 | extract | fall | financially |
| 192:8 | 161:22 | 75:10,11,13 121:16 | 98:11,21 99:14 |
| exist | extrapolating | familiar | find |
| 23:15 95:18 | 131:20 | 89:17 94:13 127:19 188:14 | 85:13,20 134:22 140:15 |
| exists | extrapolation | familiarity | 159:22 160:8 161:17 171:3 |
| 46:2 100:14 | 100:12 | 22:17 | 183:1 |
| exit | extremely | fapr | finding |
| 98:9,14 116:21 | 152:12,17 | 1:22 200:21 | 40:22 159:5 |
| expectation | f | far | fine |
| 183:1 | face | 24:17 41:5 49:7 54:8 76:4 | 192:10,12 |
| expectations | 186:6 | 91:9,19 92:18 147:15 193:3 | finish |
| 162:2,10 | faced | favor | 142:5 |
| expected | 184:15 | 156:1 | finra |
| 107:20 120:15 | faces | favorable | 12:5,14,18 |
| expedite | 47:15 | 98:2 | firm |
| 8:18 22:18 | facilitate | faye | 24:20,21,22 26:8,9 31:8 |
| expense | 174:18 175:14 | 33:12 | 35:6 101:12 |
| 106:16 151:5 | | | |

[firms - guess]

| | | | |
|----------------------------|-----------------------------|----------------------------|----------------------------|
| firms | formatting | futures (cont.) | go (cont.) |
| 101:9 | 31:5 | 97:13 114:2,6 131:8 136:8 | 105:14 114:19 132:15 |
| first | former | 136:10 137:2,3,11 153:10 | 133:8 139:7 140:9 151:3 |
| 7:16 8:19 18:22 20:7,16 | 109:2 | 153:12,14 170:6 178:8 | 154:22 155:6 156:1 158:3 |
| 21:12 33:13 61:10 66:8 | formulation | g | 174:3 |
| 70:6 81:7 86:10,22 99:18 | 31:3 | gain | god |
| 100:4 114:19 118:15 140:2 | forth | 172:2 | 180:10 |
| 141:6 142:5,12 143:21 | 106:1 133:8 154:4 | gains | goes |
| 161:3,6 | forum | 184:19 | 47:17 48:10 101:1 124:9 |
| fit | 80:2 | game | 182:11 |
| 66:20 129:8 | forward | 145:13 195:2 | going |
| five | 22:9 96:10 134:5 162:1,9 | garry | 8:16 22:18 35:16,18 36:21 |
| 39:22 49:21 52:16 | 187:2 | 5:15 109:1 110:2 | 37:8 40:1 42:19 50:3 61:9 |
| fixed | foster | general | 64:22 72:16,17 80:11,20 |
| 59:3,6 81:6,12 95:11 97:12 | 170:10 | 7:11 42:21 45:21 83:4 | 87:10 95:4 96:10,12 97:6 |
| 97:17 102:1,13 | found | 90:10 137:10 143:2,3,5,5 | 117:7 125:18 129:17 132:4 |
| flat | 192:6 | 159:17 162:8 169:1 182:10 | 134:5 147:14 149:14 152:5 |
| 95:22 | four | 191:10 | 156:4 157:7 158:2 163:22 |
| flip | 19:5,13 41:12 42:1 184:9 | generalize | 164:1 172:21 173:12,15 |
| 17:13 46:10 80:18 | fractions | 158:20 | 174:2,4 176:10 179:17 |
| floor | 153:1 | generally | 183:1 187:1 189:1,11 |
| 4:8 | free | 67:9,11,14 83:1 113:6 | 193:18 196:15,20 |
| florida | 136:21 | 114:16 121:19 136:22 | gold |
| 4:9 | frequency | 137:2,3,4 160:14 170:6 | 85:9 |
| flow | 145:15,22 153:13 | 184:4 | good |
| 73:9,14 100:16 103:5 | friday | generated | 6:20 7:20 55:14 61:19 |
| flows | 167:1 | 189:7 | 62:10 63:21 85:13,21 146:2 |
| 20:11 47:1 48:9 58:7,11,14 | front | generates | 146:3 150:18 156:8 192:7 |
| 58:21 60:18 61:5 81:14,17 | 12:5,14 142:13 169:22 | 73:19 142:18 | 192:16 |
| 81:19 82:6 96:10,14 103:22 | 184:21 | generating | goopta |
| 106:2 109:5 155:22 170:3 | fruitful | 184:21,22 | 92:20 |
| focus | 117:20 | generic | gotten |
| 56:13 57:17 | full | 128:8 | 151:4 |
| follow | 7:21 84:22 119:2 141:5 | getting | govern |
| 194:14 | fully | 54:8 87:20 126:7 140:12 | 61:14 |
| follows | 62:9 85:4 | 149:11 190:6 | graham |
| 7:17 | function | give | 6:15 |
| footnote | 23:12 | 9:12,19 42:21 80:21 82:15 | graphs |
| 110:2,11 174:21 187:14 | funding | 100:15 106:8,9 107:13 | 32:22 40:21 |
| footnotes | 111:7,11 112:14 | 108:8 110:16 118:8 138:1,8 | group |
| 60:10 | funds | 142:6 149:12 152:6 162:13 | 4:15 18:6 23:19,20 24:1,4 |
| force | 74:4 | given | 24:16 31:2,3,7,13 32:3 |
| 119:3 | further | 70:13 71:11 101:19 114:22 | 33:10 40:9 41:2 42:12,16 |
| foregoing | 120:11 139:22 194:3 | 120:12 136:10 162:16 | 122:3 |
| 199:3 200:3,7 | 196:13 200:7 | 192:3 199:4 | group's |
| form | future | gives | 40:13 |
| 25:1 42:9 45:11 46:5 56:8 | 82:10 85:10 105:6 176:9 | 38:19 157:6 | grown |
| 64:19 70:8 79:12 127:9 | 184:19,22 186:9 187:7 | global | 84:20 |
| 129:10 134:7 138:9 145:11 | futures | 88:20 91:15 92:15 158:15 | guess |
| 160:19 167:17 173:7 176:1 | 1:6 2:5 3:7 6:5,21 7:1,4 | 163:17,18,20 164:16 | 16:8 20:12 21:9 27:10 32:7 |
| 181:20 190:12 | 13:1,3 14:10 17:9 18:5 22:9 | 165:14 167:4 | 33:4 37:6 49:11 50:16 54:9 |
| formal | 23:7 35:7 49:15 50:6 58:14 | go | 56:9,19 57:6,15 67:5 73:22 |
| 8:9 11:3 48:9 | 64:5,8,11,17,21 65:2,5,7,11 | 8:16 25:13 26:6 29:17 32:1 | 82:11 83:1 86:6 94:5 |
| formats | 70:1 82:8,10,16,18 83:8,10 | 37:8 40:8 49:15 57:13 59:7 | 105:14 111:4 113:6 114:17 |
| 32:21 | 83:16 84:16 85:5 91:5 93:2 | 59:9,10 70:9 73:10,13 87:4 | 116:21 125:19 146:5 |
| | 93:13 94:6,11,21 95:12 | 90:16 95:3 98:16 101:15 | 147:18,21 152:19 154:19 |

[guess - information]

| | | | |
|-----------------------------|----------------------------|----------------------------|----------------------------|
| guess (cont.) | help (cont.) | hum (cont.) | important |
| 158:13 162:8 169:21 170:9 | 37:1 103:7 159:22 | 181:4 | 8:19 47:6,9 54:14,14 170:2 |
| 170:22 172:18 179:7 181:7 | helped | humanik | importantly |
| 182:10 183:4,14,21 185:19 | 33:6,10 40:10 160:8 161:17 | 21:20 | 76:13 |
| 191:10 196:4 | 165:4 | hypothetically | impossible |
| gupta | helpful | 183:10 | 183:18 |
| 83:17 84:6 92:19,21 178:6 | 43:5 188:20 | i | impound |
| gupta's | helps | i.e. | 83:6 |
| 92:22 | 37:5,6 | 114:20 175:7 | impounded |
| guy | hereunto | idc | 157:10 |
| 141:14 | 200:15 | 65:22 | impression |
| guys | high | idcg | 39:16 103:7 119:13 |
| 42:5 192:6 | 145:15,22 147:10 150:3,12 | 25:21 109:2 119:2 158:13 | incentive |
| h | 153:13 193:2 | 165:22 | 181:12 |
| half | higher | idch | incentives |
| 8:14 18:22 19:1 | 59:7 74:11 88:15 89:15 | 23:1,4,14,14,17 24:3 25:21 | 154:4 |
| halfway | 102:1,12 105:3,9,20 106:1 | 27:15 49:1,1,18 51:6,13 | include |
| 81:16 152:8 | 107:19,20 108:12,17 148:8 | 55:8 56:7 57:10 60:12 | 70:15 86:19 113:5 |
| hand | 150:22 176:19 179:19,20 | 76:13 104:10 113:10 | included |
| 200:15 | hit | 114:21 158:11 174:17 | 34:20 |
| handed | 94:18 108:15 143:1 145:9 | 175:4,20 176:9 188:3,10 | including |
| 110:7 164:11 | 146:4,12 147:3,7,10,15,16 | 189:14 | 86:7 |
| handing | 148:4 149:20 150:2,6,19 | idch's | incorporate |
| 109:22 118:7 | 151:3,11 153:2,4,8 154:9 | 50:8,19 | 102:2,13 107:3 194:17,22 |
| happened | 154:11,17,17 155:7 163:11 | idea | incorporated |
| 15:7 187:1 | 180:4 184:6,7,9 193:8 | 101:4 143:7 170:1,5 188:12 | 178:20 |
| happens | hitting | 188:20 | incorporates |
| 8:16 59:4 127:21 | 94:12 | ideas | 103:1 162:9 |
| happy | hold | 80:3 | incorporation |
| 151:4 167:21 | 27:6 62:16 173:20 | identical | 178:7 |
| hard | holding | 139:12 182:1 | incorrectly |
| 134:15 143:13 153:18 | 99:15 | identification | 98:11 |
| 154:5,9 195:7 | holds | 10:1,17 11:11 59:17 109:19 | incur |
| harris | 27:13 | 118:5 164:5 166:6 190:1 | 173:9 184:19 |
| 1:14 2:1 5:2,12 6:4 7:15,20 | home | identifies | independent |
| 8:1 40:8 130:7 194:4,10 | 119:19,20 | 188:18 | 127:4,6 |
| 195:4 197:5 198:2 | hopefully | idex | independently |
| hasbrouck | 8:18 | 5:13 | 128:18 |
| 168:7 | horizon | ignores | indicate |
| head | 66:17 | 131:2 | 183:9 |
| 9:4 | horse | ii | indicates |
| headed | 154:14 | 3:4 | 52:5 95:9 175:13 |
| 151:5 | hour | illinois | individual |
| header | 129:16 174:3 | 4:17 | 50:5 51:17 52:1 55:18 |
| 65:20 66:22 67:7 139:8 | hours | illiquid | 199:12,13 |
| 155:7,10 | 21:1,5,9,11 | 153:16 | individuals |
| heard | house | illustrated | 42:11 |
| 166:11 | 120:3 | 40:22 | infeasible |
| heavily | huge | imbalance | 150:11 |
| 94:7 96:17,21 | 63:8 | 81:7 82:11,12 | influence |
| hedging | hull | immediately | 38:1 39:12 |
| 170:7 | 41:5 122:5 127:11,12,15,17 | 22:11 84:8 | information |
| held | 129:12 | implementing | 16:12,15 29:1 36:6 61:15 |
| 2:1 6:11 97:15 | hum | 146:10 | 80:8 94:14 128:11,12 132:6 |
| help | 42:14 62:12 86:5 105:13 | implication | 142:10 156:21 157:6,8 |
| 30:19 31:3 32:13 36:21 | 135:19 146:19 150:9 155:6 | 170:9 | 159:8 162:21 168:9,11,12 |

[information - knowledge]

| | | | |
|--|--|---|---|
| information (cont.) 168:16 178:20 194:21 | interest 13:9,10 18:2,5 29:9 41:15 52:14 54:5 58:10 59:7 63:22 64:1,5 65:21 67:14 69:20 71:6,12,17 73:8,10 73:13,16 81:5,6 82:9,20 95:11 96:6,12 97:13 100:1 100:15,22 101:1 109:7 110:22 111:5,18 112:8 119:17 120:13 121:1 126:18 127:13 128:1 130:22 133:19 138:22 139:14 147:19 148:19 151:14 160:13,14 161:20 162:2,10 171:7 187:2 200:13 | investigation 84:19 investigations 181:8 investing 81:20 investment 73:15,16,17 101:10 185:1 investments 1:10 6:7 7:8 198:3 investor 163:1,7 165:4 167:16,20 169:10 investors 152:10,15 163:11 involves 139:14 159:5 171:19,20 irrationality 180:17 island 148:1 isolate 134:2 issue 113:11,18 123:18 126:16 165:8 195:22 issued 160:22 188:10 issues 22:2,3,5 40:15 41:15 | june 138:8 justify 126:10 |
| informative 36:15,19 informed 37:6 151:5 informing 27:12 informs 46:2 inger 127:13 inherent 71:6 74:14 98:15 inherently 117:15 initiation 98:2 innovation 103:20 innovations 103:20 inordinate 153:5 inputs 139:15 140:1 instance 64:21 102:22 128:13 instances 177:15 instantaneous 154:17 instantaneously 154:16 instructed 41:4 instruction 8:22 9:2,5,10,16 instrument 94:8 instruments 139:1 integrity 54:15 intent 15:10 37:19 interaction 32:10 interactions 33:18 interchange 92:14 interchangeable 61:22 interday 180:9 | interested 29:1 59:22 61:14 119:5 130:9 155:18 163:11 169:15 176:14 interesting 39:14 interests 165:21 interfaced 32:5 intermediary 169:13 intermediate 62:22 internal 78:5 79:8 115:11 163:18,20 189:14 internally 78:8 123:15 international 23:5 interpolate 196:5 interpolator 188:4,7,13,17 interpret 70:21 interrupted 50:3 90:16 introduce 6:17 invaluable 155:8,12,20,21 invest 74:10 81:14 invested 184:20 investigate 41:12 53:14 88:17 | investor 163:1,7 165:4 167:16,20 169:10 investors 152:10,15 163:11 involves 139:14 159:5 171:19,20 irrationality 180:17 island 148:1 isolate 134:2 issue 113:11,18 123:18 126:16 165:8 195:22 issued 160:22 188:10 issues 22:2,3,5 40:15 41:15 | justif 126:10 |
| | | j | k |
| | | january 35:18 53:11 68:19 108:6 jason 3:6,15 7:3,6 jason.manning 3:20 jeffrey 1:14 2:1 5:2,12 6:4 7:15 8:1 197:5 198:2 jeffries 53:7 76:6 88:22 107:2 116:15 158:17 178:22 185:20 186:18 187:9 job 1:21 9:12 142:19 journals 28:22 jr 7:8 judge 13:15 july 5:16 11:16 118:17 160:22 jumping 185:14 | karen 1:22 2:14 6:14 200:2,21 keep 11:2 15:12 50:3 60:6 101:10 kept 25:15 kf 1:8 6:9 kim 3:16 4:6 7:7,9 kind 121:9 135:10 156:3 knew 21:21 126:12 141:19 156:20 know 9:14 14:19,22 18:20 23:1 25:16 26:5,7,10,15,15,16 26:18,20,21 27:21 28:15 29:20 31:12 33:7 35:9 36:17 38:5,11 41:1,11,18 42:1,8 44:22 45:1 47:19 48:12 49:8 51:9,13 52:20 53:4,10 57:6,7 58:3 61:18 62:2,10,17 63:5 65:8 66:16 70:21 76:4,8 78:12 79:3,7 79:18 83:4 85:14 88:15,19 88:20 89:2,22,22 90:14 91:19 95:18 96:2,20 98:8,8 99:2,8 100:2,9,15 101:7,13 105:16,18 108:14,18 113:4 115:18,21 116:7 117:19,19 117:21 119:8 121:6 122:8 122:11 123:7 124:3 125:6 125:10,10,22 126:1,3,11,19 132:13 135:11 141:7 142:4 145:14 147:13,18 153:3,12 154:13,22 155:22 157:4,7 158:16,17 160:15 163:14 164:15,17 165:10,12 166:1 168:13 171:4,10 173:10 176:8 179:2,3,5 181:13,16 186:17,20,20 187:8 188:3,7 188:18 195:16 196:8,18 knowing 53:17 152:22 knowledge 13:13 53:20 57:9 78:15 85:18 89:7,11 123:18 124:6 152:19 |

[kobre - manipulation]

| | | | |
|---|---|--|---|
| kobre 3:16 4:6 7:6,9 | letter 112:21 113:1,2 | llc 1:10 6:7 7:8 198:3 | lose 172:17 173:1,12 186:9 |
| kobrekim.com 3:20 4:11 | level 123:6 142:8 143:8 | llp 3:16 4:6 7:7 | losses 173:9 |
| I | levy 4:14 7:11 | lobbied 116:17 | lost 103:3 |
| lack 103:17 109:3 110:20 112:5 115:1 179:8 | licensures 16:22 | lobbying 117:13,14 146:6 | lot 42:5 62:7 137:6,6 157:6 180:15 190:10 |
| lacked 101:20 | life 66:14 81:9,15,22 82:3,3 96:7 98:7,13 99:6 100:4 103:2,5 117:8 187:3 | logic 70:13 87:6 191:15 | lourie 4:5 7:9,9 |
| large 61:16 147:21 | likewise 120:12 | logical 151:2 191:20 | lower 173:11 176:20 177:20 |
| largely 122:2 176:20 177:20 | limit 50:17 | long 45:1 52:21 53:8,18 54:1,21 54:22 55:7 58:20 59:2,8 69:20 72:16,16,22 73:8,9 73:14,15,19 74:9 95:18 97:15 98:22 99:15,22,22 100:21,22,22 101:3 106:3,4 106:16 108:3 109:5 115:14 116:3 143:22 144:16,20 145:1,4 150:17 152:9,12,17 154:10 155:4 182:14 186:6 192:8 | luitgaren 5:17 141:12,13,21 143:6 |
| late 52:22 69:11 82:12 | limited 195:18 | longer 52:19 | lunch 129:16,19 130:6 |
| launch 63:9 | line 51:20 111:4,4 137:17 167:7 167:9 198:4 | look 9:18,20,20,21 10:14 11:9 11:13 14:7 16:14 17:14 30:5 43:1,2 46:13,16 53:16 54:6 55:16 58:18 60:2 68:8 73:12 80:21,22 85:7 87:5 94:7 95:2,7 100:10 101:16 101:16 103:4 106:8,9 107:12 108:20,21 118:9,15 121:18 122:8 125:20 126:16 130:7 131:13 132:15 134:19 135:14 138:6 143:17,18 152:6 162:12,13 164:10,18,21 167:6 171:2 174:13 176:16 178:1,3 181:17,18,21 183:16,17 185:4,5,17 186:11 191:22 192:1 | m |
| laurie 164:15 | lines 137:21 196:7 | looking 38:6 54:7 65:15 66:14 76:9 89:12,13 96:10 131:15 154:3 162:1,9 187:2 | maclaverty 36:2 |
| law 12:7 | link 142:15 | looks 38:3 60:7 83:18 187:13 196:5 | maclaverty's 36:13 |
| lawsuit 34:22 35:4 | linking 147:22 | | madison 4:16 |
| lawyers 15:12 | liquid 85:5,10 94:9 101:11 | | mahoney 3:6 7:3,3 |
| lch.cleartnet 102:8 | liquidity 16:6,7,10,11,14 85:14 90:4 90:6,9,11,13,18,21 91:5,7,9 97:5 98:18 147:17 154:1,5 184:17,22 195:11,13 | | mail 5:16,18 118:16 122:12,17 124:4 164:19,22 165:17 174:22 |
| lead 64:7,10 106:2 123:14 185:1 | list 34:7,20 174:18 175:13 | | mails 78:5,6,8 115:11,12 |
| leading 111:9 | listed 34:15,17 42:2 49:6,7,7,9,18 49:19 | | main 49:20 |
| leads 44:4 | listen 33:19 | | maintaining 163:1 |
| learn 87:19 88:1 | listening 36:16 | | major 147:9 |
| learned 178:13 | literal 33:21 | | making 97:4 129:7 155:18 169:15 171:6 |
| learning 87:22 88:7 89:6,8 | literature 83:1 125:16 | | manage 62:3 |
| leave 29:11,13,14,15,16,16 | litigation 188:19 | | managed 101:13 |
| led 92:13 109:5 110:20 112:6 | little 55:12 62:1,6 74:1 127:1 139:6,21 178:6 183:7 196:3 | | management 28:12 56:2 |
| left 157:1 | live 120:8 140:4,16 | | manager 27:12 |
| legal 173:21 187:9,11 | livingston 8:3 | | manages 23:9 |
| legitimate 44:1,8 155:9 175:8 | | | manipulate 35:7 38:9 105:15 |
| lehman 159:15 | | | manipulation 165:9 171:10,18 172:1,14 172:22 181:6 |
| lending 170:3 | | | |
| length 154:21 185:10 | | | |

[manipulations - model]

| | | | |
|----------------------------|----------------------------|----------------------------|-----------------------------|
| manipulations | market (cont.) | mean (cont.) | methodology |
| 171:15 | 140:5,9,10,11,11,16,19,19 | 91:6 98:10,12,12 99:11 | 51:14 |
| manipulative | 147:16,20,20 148:11,15,19 | 100:12 101:9 103:20 | metric |
| 170:13,15,18 172:11 | 149:1 154:5 155:15 156:13 | 104:22 114:12 115:1 | 91:4 132:5 |
| manning | 156:14,20,22 157:5,11,12 | 117:14 120:16 121:4 122:4 | metrics |
| 3:15 7:6,6 25:1 36:5 38:14 | 157:14,14,17 158:3,4,9,18 | 122:15 123:9 125:14 126:2 | 91:7 |
| 39:2 42:9 45:11 46:5 56:8 | 159:7 160:8,12,14 161:15 | 129:11 135:8,13 136:5 | mf |
| 64:19 70:8 71:10 74:17 | 161:17 162:20 164:2 165:9 | 137:4 140:14 146:5 147:12 | 88:20 91:15 92:15 158:14 |
| 75:7 79:12 87:16 92:7 | 168:4,9,16,16 170:8 171:10 | 147:21 149:5 150:16 154:2 | 163:17,18,20 164:16 |
| 100:13 102:17 116:13 | 171:18 172:2,3,4,7,9 | 154:2,12,19 155:22 156:2 | 165:13 167:4 |
| 127:9 129:10 134:7 136:20 | 177:11 178:13,17,17 179:9 | 157:17 160:5 168:15 | miami |
| 138:9 145:11 146:16,20 | 180:5 183:14 184:18 | 169:20,21 171:14,22 177:2 | 4:9 |
| 151:21 157:16 160:19 | 195:11,16 196:3,6,8 | 178:16 180:13 181:6 | michael |
| 167:17 173:7 176:1 181:20 | marketplace | 183:16 184:14,20 191:18 | 33:11 42:4 |
| 187:19 188:16 190:2,7 | 23:9 43:12 44:21 84:5 85:2 | 192:2 193:9 194:19 195:10 | microphone |
| 192:2,8,10,12,15,18 194:6 | 85:14 125:14 138:12,13 | 196:1 | 118:2 |
| 194:9 196:12,22 | 196:10 | meaning | microseconds |
| map | marketplaces | 33:21 180:19 | 145:14,17 155:2 |
| 99:5 | 123:11 | means | mid |
| march | markets | 45:9 47:20 48:1 58:20 59:3 | 108:7 146:10 |
| 123:12 124:11 | 18:3,4 22:13 87:19 91:3 | 90:14 181:5 | middle |
| margin | 94:15 104:16,17 120:14 | meant | 95:8 162:15 192:20 |
| 46:22 47:1,6,10,10,15,16 | 121:11 122:6 125:17 | 58:14 62:2 108:16 | midpoint |
| 48:22 54:11,12,14 55:10,20 | 130:20 133:8,17,20 136:11 | measure | 182:21 |
| 55:22 56:11,21 57:18,20 | 136:21 138:21 147:18 | 134:1 | million |
| 60:17 61:4 67:13 70:2 | 152:20 153:10,12,13,15,15 | measurement | 65:8 |
| 71:20 72:3,13,20 73:11 | 153:17,17 154:4 156:7 | 67:16 | mind |
| 74:4,22 101:2,5,8 106:2 | 158:1 169:12 170:3,6,11 | measures | 15:12 27:10 66:11 142:17 |
| 136:18 | 172:1,18 195:19 196:5 | 133:1 | 143:10 |
| margins | marking | measuring | mini |
| 55:19 56:22 65:22 73:21 | 48:22 54:6 59:14 187:17 | 134:2 | 65:11 |
| 101:11 | marks | mechanically | minification |
| mark | 48:6 | 142:7 | 171:3 |
| 109:21 118:2 136:17 166:3 | material | mechanics | minimizes |
| 189:20 | 34:8 | 143:2 | 47:4 172:12 |
| marked | matt | mechanisms | minute |
| 9:19,22 10:4,15,16 11:10 | 14:22 15:16 | 103:6 137:7 169:17 | 30:6 39:22 80:9 164:10 |
| 30:8 47:20 48:3,19 52:11 | matter | meeting | 174:3 193:16 |
| 59:16 82:13 109:18,22 | 6:5 8:12,13 12:18 13:18 | 21:4 28:9 | minutes |
| 110:1 118:4,7 164:5 166:5 | 14:12,13 38:2 58:2 113:11 | meetings | 145:3,4,19 152:11 153:4,5 |
| 166:8 189:22 | 166:17 168:15 175:22 | 19:6 27:6 | 155:4 |
| marker | mattered | member | mirror |
| 80:4 | 56:10 88:13 | 18:16 | 58:14 |
| market | matters | members | misstating |
| 18:7 22:14 38:1,9 39:12,16 | 148:6 | 40:10 | 43:20 71:4 |
| 44:17 47:20 48:3,7,19 | maturities | membership | mistake |
| 52:11 57:4 63:1 65:16 76:3 | 135:4 144:11 | 28:22 | 74:2 |
| 76:16 82:13 83:19 84:9 | maureen | mentioned | misunderstanding |
| 85:2,19,22 87:18,21 88:13 | 168:10 | 169:12 185:12 | 74:16 |
| 89:2,18 90:10 93:9 94:21 | maximizing | merit | mode |
| 96:17 97:4,5,8 98:16 100:1 | 151:2 | 2:15 | 151:2 |
| 104:22 111:6 112:13 113:7 | mean | met | model |
| 115:22 116:7,8,12 117:5,12 | 21:4 43:15 45:14 50:15,16 | 7:20 21:20 26:21 166:15 | 31:3,4 41:5 96:11,16 97:7,7 |
| 128:4,7,11,12,13 131:15 | 52:18 55:15 57:14 59:1 | methodologies | 122:5,9 123:8,10,12,17,22 |
| 132:13 134:10,10 136:16 | 64:20 65:11 66:8 67:6,10 | 41:2 | 124:13,15 125:6,13,20 |
| 136:17,21 137:3 139:4 | 73:6 87:18 90:14,17,18 | | 126:3,5,8 127:12,12,19 |

[model - occasions]

| | | | |
|----------------------------|---------------------------|----------------------------|----------------------------|
| model (cont.) | montreal | necessitate | npv |
| 128:8,18 129:2,3,7,13,13 | 32:8 | 131:16 | 67:21 71:1,15,18,21 74:13 |
| 130:13,18 131:19 132:18 | moot | necessitated | 75:18 81:11,18 82:4,7,14 |
| 134:1,4 135:15,21 136:2 | 121:9 | 20:11 | 82:17,19,21 83:6 86:2,7,15 |
| 137:14,22 138:8,20 140:1,6 | morning | need | 87:13 88:9 95:9,15,19 |
| 140:15,21 142:16,17 | 6:20 7:20 | 47:9 142:12,14 | 97:11,20 98:5,6,13,22 99:4 |
| 143:10,10 150:15,20,21 | mortgage | needs | 99:9,12 102:2,13 103:7 |
| 151:9,11,12,16 160:18,22 | 12:20 13:4 | 165:20 | 104:9 106:13,14 107:18,21 |
| 161:6,7,9,22 162:9 177:10 | motion | negative | 108:13 128:20 133:6 135:2 |
| 177:12,17 182:5,13 | 13:17 14:20 | 81:17 | 135:17 148:10,14 149:6,12 |
| modeled | mouth | negotiated | 178:7 |
| 149:7 | 43:19 56:5 137:10 | 91:16,21 98:9 99:3 131:7 | number |
| modeling | move | 187:5 | 6:8 9:22 10:16 11:10 32:15 |
| 41:16 95:10,16 96:4,15 | 91:10 106:7 | negotiation | 59:14,16 61:16 63:22 83:4 |
| 97:12 121:21 122:1,2 | moved | 92:1 107:2 | 109:18 118:4,22 127:18 |
| 123:15 124:5 139:5,14,15 | 31:20 55:18 183:8 | neither | 147:21 164:4 166:5 189:21 |
| 139:22 151:16 182:3 | movements | 200:12 | 189:22 |
| models | 57:19 | net | numeral |
| 127:14,18 137:22 138:2 | moving | 81:4 82:4 185:11 | 46:11 65:19 |
| 161:20 177:5,17 | 172:7 190:19 | network | <hr/> |
| model's | multiple | 79:21 80:1 | o |
| 129:8 | 101:12 135:4 136:9 | new | <hr/> |
| money | multiplied | 1:2 3:18,18 6:8 37:12 63:6 | oath |
| 23:11 35:10 171:6 173:1,2 | 54:5 | 63:9 168:11 188:10 | 7:13 |
| 173:12 | <hr/> | newell | object |
| monitor | n.w. | 14:10 | 127:9 134:7 |
| 125:16 | 2:6 3:8 | nfx | objection |
| monitoring | name | 49:14,15,18 50:18 161:15 | 25:1 36:5 38:14 42:9 45:11 |
| 158:17 | 7:21 8:1 14:3 25:17,19,21 | 161:17 | 46:5 56:8 64:19 70:8 71:10 |
| month | 33:13,14 188:18 198:2 | nominations | 74:17 75:7 79:12 87:16 |
| 18:18 35:8 39:13 48:14,15 | 199:21 | 19:9 | 92:7 100:13 102:17 116:13 |
| 48:18 49:6,17 50:9,20 52:6 | named | non | 129:10 138:9 145:11 |
| 52:21 53:3,5,8 58:12,13,20 | 199:13 | 44:15 45:5 101:22 117:16 | 151:21 157:16 160:19 |
| 59:2,21 60:14,20 61:6 | names | 119:4,12,17 146:2 148:9,18 | 167:17 173:7 176:1 181:20 |
| 65:20 66:2,9,11,20,22 67:7 | 33:9 141:8 | 177:7 | 187:19 |
| 67:12 68:2,5,15 69:6,12 | nasdaq | normally | obligations |
| 70:7 75:5 78:4,6,13 79:4 | 146:10 | 27:7 | 12:21 |
| 86:3,12,15 87:2,14 88:8 | national | north | observable |
| 97:15,18 99:1,16 101:20,21 | 49:15 | 145:3 | 82:8,16 |
| 104:5,11,20 105:4,10,19 | nationally | northwest | observation |
| 106:5,21 107:6 108:4 109:6 | 105:15 | 6:12 8:3 | 191:13 |
| 110:21 111:17 112:7 | native | notary | observe |
| 113:10,13 114:11,22 | 190:12 | 199:18 200:22 | 70:6 86:11,14,22 |
| 115:13 116:1 119:16 | nature | noted | observed |
| 120:13,22 121:5,7,13 | 35:4 | 119:16 | 70:11 |
| 124:18 130:17 131:1,3,5,21 | ndx | notice | observing |
| 134:10,12 135:1 138:7 | 49:11 | 198:1 | 155:15 |
| 141:9 144:6 151:19 159:18 | near | noticing | obsolete |
| 160:1,9 161:16 162:5,7,10 | 95:8 160:16 | 6:19 | 168:12 |
| 162:17,19 163:6 167:12 | necessarily | notion | obtained |
| 175:9 178:12 179:22 | 50:11 56:1 65:17 70:19 | 56:20 88:12 143:3 148:5 | 53:4 |
| 181:18 186:12 | 114:5 115:20 117:1 126:11 | notional | obvious |
| months | 146:1 194:14,16 | 51:7 | 65:6 |
| 52:17 108:8,9,10,11,12 | necessary | november | obviously |
| 122:14 132:15 | 199:6 | 69:3 | 22:17 38:15 39:17 48:13 |
| | | | 88:20,22 167:21 |
| | | | occasions |
| | | | 8:8 |

[occur - page]

| | | | |
|-----------------------------|-----------------------------|----------------------------|----------------------------|
| occur | okay (cont.) | okay (cont.) | orders |
| 28:9 151:13 | 34:2,7,11,21 35:3,11,16 | 191:14,17,22 192:12,20 | 93:5 107:5 143:14 146:11 |
| occurred | 36:1,21 37:4,8,15,22 38:11 | 193:6,11,15 195:4 | 196:18 |
| 84:16 93:13 151:18 165:13 | 39:4,10,21 40:12,17 41:1,8 | old | organization |
| 167:3 175:15 183:17 | 41:11,17,20,22 42:7,18 | 168:12 | 21:15 24:8 28:21 42:16 |
| occurs | 43:4,13,16 44:7,10,13 45:8 | onboard | original |
| 94:10 | 46:10,15 47:6,8,19,22 | 22:15 184:16 | 58:1 84:13 199:7 |
| o'connor | 48:13,21 49:3 50:2,8,13 | once | ot |
| 5:15 109:2,12 110:3,20 | 51:2,4,4,13 52:9,14,20 53:1 | 26:22 146:12 176:10 | 70:14 |
| october | 53:4,10,14,19 55:3,14,21 | ones | otc |
| 69:2,18 75:1,8 | 56:4,18 57:5,16 58:6,16,18 | 85:7 | 65:21 67:8,14 69:13,16 |
| offense | 59:4,11,14 60:4,10,10,16 | oohs | 70:15 71:8 72:8 89:15 |
| 181:14 | 63:2,5 64:7,10,13 65:14 | 9:4 | 100:18,21 109:7 110:22 |
| offer | 66:15,19 67:5,8,16 68:8,18 | open | 111:18 112:8 114:20 116:2 |
| 45:13 94:17 136:12 141:8 | 69:1,3,4,9,17 70:1,5,17 | 50:9,12,17,20 51:5,12,15 | 116:5 119:17 120:13 121:1 |
| 142:20 143:1 146:12 | 71:1,14 72:1,7,12 74:22 | 52:6,16,19 53:5,10,17,22 | 131:6 134:3 148:9,18 149:1 |
| 147:13 156:22 182:20,22 | 75:4,12,20 76:5,7,9,22 | 54:4,21,22 55:4 56:6 57:3 | 149:3,16 189:3 |
| offered | 77:19,22 78:12,20 79:2,8 | 57:10 58:11 60:6,13,19 | outcome |
| 77:3,10,15 193:2 | 81:2 83:8,13 84:15 86:10 | 61:5 69:18,20 72:4 76:1 | 200:14 |
| offering | 86:21 87:12 88:7 89:12 | 77:2,9,20 78:4,14 79:1 | output |
| 37:18,22 148:21 | 90:15 91:12 93:11 95:2,15 | 100:5,10 154:9,11 173:4 | 32:19,20 161:3 |
| offers | 96:16 97:9,20 98:21 99:8 | opened | outside |
| 94:12 156:18 159:2 170:1 | 99:14,18 100:6,9 101:18 | 53:8 133:8,11,16 | 15:15,17 30:1,1 33:21 |
| office | 102:11,21 103:9 104:8,14 | operate | 34:11,14 37:12 92:15 93:22 |
| 32:4 | 105:8 106:4,11 107:5,9,12 | 94:16 154:13 | 107:17 123:20 196:5 |
| officer | 107:14 108:20,22 109:15 | operated | overall |
| 200:2 | 110:6,13,16,18 112:20 | 62:13 | 172:5 |
| officers | 113:16,19 114:10,15 | operations | overbid |
| 27:22 28:14 | 115:10,16,21 116:8 118:11 | 19:7 32:16 | 183:12 |
| offices | 118:15 119:10,15 120:3,11 | operator | overnight |
| 2:2 22:1 31:17 | 120:21 121:18 123:20 | 6:3 7:12 40:1,5 80:11,15 | 73:16 74:5,11 |
| official | 124:8,21 125:22 129:6,15 | 129:17 130:3 174:4,8 | overpaying |
| 27:11 | 129:15 130:11,16,21 131:2 | 193:18,22 196:15 | 182:18 |
| offset | 131:11,18,22 132:10,18 | opines | oversee |
| 82:1 103:7 107:21 108:13 | 133:1,15 134:14,17,21 | 84:12 | 40:12,14 |
| offsetting | 135:8,21 136:4,8 137:9,14 | opinion | oversight |
| 185:1 | 137:19 138:2,5,16,19 139:9 | 39:10 86:1 144:19 163:9 | 19:11 62:22 169:13 |
| oh | 139:18,21 141:20 143:4,13 | 168:2 173:22 184:1,12 | owned |
| 30:10 112:2 161:11 170:14 | 143:16,20 144:15 145:8,21 | opinions | 24:13 |
| 171:12 181:21 | 145:21 146:8,14,14 147:5 | 13:14 37:12,16,19,22 38:18 | owner |
| o'hara | 147:11 148:7 149:19 150:5 | 43:7 | 25:7,17 26:10,14 |
| 168:7,10 | 151:15 152:5,7,8,21 155:6 | opportunities | owners |
| okay | 155:12 156:11 157:21 | 170:7 | 24:19,22 25:4,9 |
| 8:8,10,12,16 9:2,12,18 10:2 | 158:7,12 159:1,4,13,14,17 | opportunity | owning |
| 10:7,11,14,21 11:5,8,17 | 159:21 160:3,7 161:4,12 | 152:14 160:4 | 98:19 |
| 12:8,11,17 13:11,14 14:3,6 | 162:12,14 163:5,9 164:3,12 | opposite | |
| 15:2,5,10,15,19,21 16:18 | 164:15,18 165:2,12,16,19 | 59:12 95:21 172:6 192:21 | p |
| 16:22 17:5,8,11,13,17,22 | 166:3,11,14,19 167:2,6,10 | optimization | p&l |
| 18:9,12,18,21 19:3,8,16,22 | 167:14 168:18,22 170:15 | 31:4 32:15,18 41:5 | 185:17 186:11 |
| 20:6,9,13,15 21:1,6,10,17 | 173:15,20 174:2,15,16 | option | p.m. |
| 22:16 23:1,3,14,17 24:2,5 | 175:3,12,19 176:5,8,13,18 | 116:22 117:1 | 118:17 129:19 130:2 174:6 |
| 24:10,13,18 25:4,8,11,16 | 177:2,6,12 178:1,1,4,11,16 | options | 174:7 193:20,21 197:6 |
| 26:5,10,13,17,20 27:4,9 | 180:3,8 182:3,13 183:21 | 116:11 117:11 | page |
| 28:3,13,16 29:3,6,18 30:1,5 | 185:6,22 186:7,10,17 | order | 5:2,8 11:5 17:15,16,19 |
| 30:13,16,22 31:9,13,16,18 | 187:16 188:3,9,12,15 | 142:13 145:13 153:1 | 42:18 46:11 53:21 59:22 |
| 31:21 32:3,9,11 33:1,19,20 | 189:19 190:16,19,19 191:8 | 196:19 | 60:5,6,11 61:9 65:19 76:20 |
| | | | 79:10 80:19 111:4,5 121:18 |

[page - position]

| | | | |
|----------------------------|-----------------------------|-----------------------------|----------------------------|
| page (cont.) | participants (cont.) | people | places |
| 121:20 139:8 143:16 155:6 | 178:18,20 | 28:13 31:2 32:7 33:9 41:12 | 172:19 |
| 162:12 167:6,7,8 168:22 | participate | 42:1 80:4 83:5,11,13 88:1,7 | placing |
| 174:11 185:3 192:4 198:4 | 158:4 | 88:19 89:19,22 94:16 | 68:20 69:6 72:2 108:3 |
| pages | participating | 117:22 120:18,19 143:12 | 122:9,20 142:1 145:2 |
| 43:1 46:11 110:3,13,17 | 181:13 | 150:7 157:5 180:16 181:2 | 179:19 |
| 167:12 176:14 | particular | 182:21,22 184:16 | plaintiff |
| pai | 22:4 48:6 84:3 85:15,21 | perceive | 1:7 3:3 6:21 7:1,4 194:3 |
| 101:20 103:1,18 104:6 | 88:12 117:20 131:17 | 184:5 | plaintiffs |
| 106:14 109:3 110:20 111:3 | 135:18 147:20 162:1 | perceived | 7:18 |
| 111:13 112:5,12,13 113:5 | 163:12 169:18 178:19 | 150:11 | planned |
| paid | 179:16 187:20 | percent | 40:20 |
| 23:11 49:1 186:2 | particularly | 125:11,12 157:8 | plate |
| panel | 28:12 | performance | 157:3 |
| 12:15 | parties | 47:11 | platform |
| panes | 14:15 29:1 89:6,8 200:13 | performed | 147:4 174:20 175:15,17 |
| 57:21 | parts | 41:13 | 176:11 |
| paper | 170:2 | period | play |
| 65:15 78:17 79:13,18 80:6 | party | 35:7,17,21 38:5 52:6,16 | 13:5 180:15 |
| 83:18 84:3,21 88:11,12 | 6:19 66:19 67:1 72:16,17 | 55:5 68:19,19,22 69:2,5,8 | please |
| 94:14 122:14,18 123:12,13 | 73:8,9,14,15,19 74:3,9 | 69:11 70:3 72:2,9 75:10,11 | 6:17 7:13,22 9:14,19,19 |
| 124:11 127:8,16,22,22 | 103:3 106:3,15,16 107:20 | 75:13 88:9 89:10 100:19 | 10:8,14,22 11:9,14 14:8 |
| 140:3 146:9 168:7,7 199:7 | 109:5 146:4 171:21 174:18 | 107:17 108:6 124:10 125:1 | 17:14 30:6 34:12 46:11 |
| papers | party's | 131:10,12 133:16 134:16 | 59:15 60:2,6 61:1,12 80:19 |
| 92:22 168:17,18 180:22 | 51:5 69:17,19 77:1,9 | 135:3 144:2,12 145:3,4,6 | 101:15 106:8,9 109:21 |
| paragraph | passed | 146:18 149:21 151:18,19 | 113:21 114:19 130:8 |
| 46:13,18 58:6,18 60:1,11 | 132:12 169:16 | 152:9 154:10 162:18 176:6 | 134:17,18 143:18 152:5 |
| 60:16 61:3 76:9,11,12 | pat | 179:19,22 181:19 194:21 | 162:13 166:4,22 174:11,12 |
| 79:10 80:21 95:7,8 101:15 | 7:11 | permutes | 178:2,3 185:3 189:20 192:1 |
| 103:10 106:7,12 107:12 | path | 45:9 | 196:17 |
| 108:20 109:1 112:17 113:8 | 96:12 | personally | plenty |
| 114:19 119:16 130:9 | patricia | 26:21 | 154:12 |
| 134:17,18 139:7 143:17 | 4:14 | ph.d. | plevy |
| 148:7 152:5,8 156:4 159:11 | patrick | 42:4 | 4:19 |
| 159:19 162:12,15 169:21 | 6:15 | philadelphia | point |
| 174:13,17 175:12 176:13 | pattern | 49:10 | 66:13 73:2 79:3 110:19 |
| 176:15,16 178:1 185:4,8,18 | 181:1 | phone | 124:7 125:2 134:11 137:18 |
| 187:14 190:19 191:22 | patterns | 32:10 | 158:19 162:6 |
| 192:4,20 | 180:9 | phrase | pointed |
| paragraphs | pay | 47:19 149:9 187:21 188:14 | 112:11 |
| 42:20 46:13 95:3,5 106:8 | 105:4 148:22 186:5 | phrased | points |
| 191:7,16 | payer | 16:4,8,9 | 64:22 126:21 130:16 |
| parameters | 59:3,6 81:12 95:11 97:12 | physically | 135:16 |
| 131:20 161:22 162:4 | 97:17 | 142:2 | poisonous |
| part | paying | piece | 150:11 |
| 64:17 87:19 94:19 99:12 | 20:2 81:17 | 168:8,11 | policy |
| 100:4 121:14 149:6 172:11 | payment | pile | 169:4,4 170:8 |
| 180:10 182:6,7 | 186:8 | 103:21 | portfolio |
| partially | payments | place | 172:10 |
| 79:10 85:1 | 81:8,9,13 82:1,2,12 187:7 | 105:18 145:1 | portions |
| participant | peer | placed | 16:10 |
| 44:17 116:8,12 117:6,12 | 79:18 | 107:5 122:9 129:3 141:8,9 | position |
| 156:13,19 158:16 | pending | 143:21 144:6 145:2,9 146:1 | 51:5,10,12,15 53:8 54:22 |
| participants | 9:9 | 146:3 163:6 | 54:22 55:9 56:1,10,22 59:5 |
| 19:11 57:4 62:9 85:3 87:21 | pennsylvania | placement | 60:19 61:6 69:18,20 74:9 |
| 113:7 157:11,13 170:8 | 31:20 32:4,4 | 152:11 168:3 | 77:2,9,20 78:4 79:1 97:15 |

[position - providing]

| | | | |
|----------------------------|-----------------------------|----------------------------|-----------------------------|
| position (cont.) | premium | prices | process (cont.) |
| 98:22 99:15 100:5,10 106:5 | 105:5 | 32:17 35:10 38:1,4,10 39:6 | 142:2 143:7 156:7 158:21 |
| 106:16,17 116:10,21 172:5 | prepare | 39:9,12,18,20 41:7 45:14 | produce |
| 173:4,5 182:15 186:5,18 | 21:4 | 47:4 50:14 65:1 68:2,6,9 | 78:16 |
| 187:5 | presence | 70:7,10,12 72:16,17 75:17 | produced |
| positioned | 148:10,14 199:16 | 75:17 78:1 83:22 84:13 | 46:7 68:21 78:17 123:11 |
| 61:18 | present | 85:4 86:2,4,18,19 87:9,10 | producing |
| positions | 44:22 81:4,22 82:4 185:11 | 90:2 94:11 104:10,10 106:2 | 40:21 |
| 50:9,12,17,20 52:6,15,18 | 186:8 187:5 | 114:3,3,8 119:4,12,22 | product |
| 52:21 53:5,11,17 54:1,2,20 | presenting | 120:8 121:6,9 124:22 | 23:22 48:2 49:9 52:15 85:3 |
| 55:4 56:6,12 57:3,11 58:2 | 6:16 | 126:14 128:14 134:9 136:9 | 104:2 113:6 114:6 188:5,6 |
| 58:11 60:13 62:3 72:4 76:2 | presents | 136:9,12,14 138:1,3 140:9 | 195:21 |
| 77:17 78:14 101:12 115:14 | 47:17 | 140:12,18 149:10 150:12 | products |
| 116:3 131:6 133:12,16 | presumably | 150:22 152:14,15 158:8 | 13:9 17:3,9 18:2 21:14 48:3 |
| positive | 67:2 99:5 | 160:16 165:8 173:10 176:3 | 126:17 195:6 |
| 100:15 101:8 | presume | 177:8,9,18 179:10,12,13,14 | professional |
| possible | 69:7 79:5 94:13 116:4 | 179:15,21 180:5 181:17,22 | 2:15,17 16:19 17:8 42:16 |
| 144:14 | 122:15 123:9,14 128:6,10 | 189:9 196:6 | professionally |
| post | 144:14 | pricing | 42:17 |
| 56:22 142:15 | presuming | 64:10,15 65:10 70:20 72:7 | profit |
| posted | 143:9 | 73:4 74:14,19 78:13 79:4 | 151:2 |
| 56:21 79:20 91:16 143:22 | presumption | 83:14,22 84:7 86:11,14 | profits |
| 144:15,20 152:14 | 123:20 | 87:1,15 88:16 93:3,12 | 185:20 |
| posting | pretty | 94:22 121:2,4 124:17 | program |
| 90:11 92:13 168:14 | 112:18 181:22 | 130:10 132:5 169:11 178:8 | 32:18 |
| posts | previous | 187:17 | programmed |
| 94:17 | 132:6,12 | primarily | 41:6 |
| potential | previously | 29:3 | project |
| 150:5,14 152:10 155:16 | 46:1 | primary | 80:5 |
| 193:7,12 | price | 25:6 28:20 162:18 | promote |
| potentially | 16:14 35:7 38:12 43:8,9,10 | prior | 169:7 170:19 |
| 74:10 144:1,16,21 145:9 | 43:11,17,22,22 44:4,8,13 | 113:10 | promoting |
| 165:9 | 44:14,15,19,21 45:1,3,5 | priority | 170:16 |
| practices | 46:6 48:4,4,7 51:8,9,10 | 119:1 | proper |
| 19:10 | 55:16,18 57:19 60:1,18 | privileged | 135:22 159:5,22 160:8 |
| practitioner | 61:5 66:12 68:15 69:12,13 | 36:6 | 161:18 |
| 28:20 | 69:16 73:2,7 74:18 75:4,14 | privy | properly |
| practitioners | 76:11,15 77:13,14 82:16 | 25:15 | 62:10 |
| 29:10 | 86:9 87:5 89:8 91:8,10 92:3 | probably | proprietary |
| preceded | 92:10,11,12 93:6,9,19 94:2 | 16:12 21:4,12,15 24:4 29:5 | 26:8 |
| 94:4 | 94:10 97:3 98:18 99:3,21 | 75:21 100:7 126:19 128:6 | prospect |
| precedes | 104:18 111:5 113:9,11,19 | 153:21 158:17 | 22:5 |
| 112:12 | 114:1 135:22 136:3,7,19 | problem | protect |
| precipitated | 137:7,12,13,15 138:7,8,13 | 171:8 192:5 | 169:18 |
| 186:18 187:11 | 138:18 140:17,22 141:2 | problematic | provide |
| precise | 148:19,21 149:3 155:9,13 | 127:1 | 90:21 104:17 137:16 170:7 |
| 139:11 | 155:18 156:5,6,8,11,12 | procedure | 173:21 184:17 |
| preclude | 157:18 158:2,21 159:5,22 | 12:15 48:10 | provided |
| 38:6 | 160:5,8,11 161:18 162:6,19 | procedures | 32:19 46:1 55:11 152:14 |
| predicated | 162:22 163:12,14 168:4,8 | 116:17 117:2 | 174:17 |
| 150:14 | 168:20 169:7,10 170:1,16 | proceedings | provides |
| predicts | 170:19,21 171:4,15,16 | 200:3,6,8,9 | 90:9 |
| 96:11 | 175:5,6,21 180:4 182:21 | proceeds | providing |
| premise | 189:5 191:1 194:11,18 | 60:18 61:4 | 31:4 43:7 90:11 97:5 |
| 150:21 | priced | process | 168:15 |
| | 72:8 179:2,6 | 23:20 93:7 119:19 141:22 | |

[proximity - referring]

| proximity | question (cont.) | rates (cont.) | reasons |
|----------------------------|-----------------------------|----------------------------|----------------------------|
| 167:3 | 33:21 34:12 36:9 38:16 | 124:22 125:1,5,7 126:5 | 105:9,12 147:6,9 150:6 |
| prudent | 39:14 45:22 57:14 60:21 | 130:22 133:4 148:8 149:16 | 193:7,12 |
| 97:6 125:14 | 61:2 70:22 77:6,7 86:21 | 157:15 160:14 176:20,21 | recall |
| public | 143:6 155:2 182:11 186:11 | 177:3,4,7,20 179:20 181:19 | 8:14 28:2 78:11 113:3 |
| 124:12 143:11 199:18 | 190:8 | 183:8 187:2 193:3 | 141:5 144:13 163:20,21 |
| 200:22 | questions | rational | 186:21 187:18 188:1,2 |
| publicly | 15:13 37:9 42:19,21 47:8 | 105:9,12,16 180:11 181:2 | receive |
| 123:12 128:7 163:10 | 60:3 80:20 95:5 118:10 | 181:10 182:12,13,16 | 34:2,15 |
| publishes | 130:9 169:2,4 194:3,7 | 184:13,17 185:2 | received |
| 28:21 | quick | rationality | 49:1 55:11 59:7 |
| purchase | 42:21 | 46:7 180:13,15,19,22 181:5 | receives |
| 97:2 | quiddity | 181:14 182:11 183:6,9,13 | 81:13 |
| purposes | 14:11 | rationally | recess |
| 85:12 136:17,18 | quinn | 45:1 104:21 190:21 | 40:3 80:13 129:19 174:6 |
| pursuant | 33:12 42:4 | reach | 193:20 |
| 2:14 200:5 | quite | 185:8 | recognize |
| push | 57:14 | reached | 10:4 30:6,7 167:11 190:14 |
| 171:15 | quiz | 44:8 | recognized |
| pushing | 53:19 180:18 | reaching | 89:19 186:4 |
| 172:2 173:10 | quote | 186:12 | recollect |
| put | 45:14 94:2 111:22 | read | 14:3 |
| 32:20 33:8 35:6 43:18 | quotes | 22:16 33:6 42:21 60:22 | recollection |
| 44:20 56:4 73:11 80:4 | 93:8 94:1,15 175:8 | 71:5 73:22 77:5,21 83:14 | 119:6 |
| 85:19 87:7 105:18 119:9,11 | quoting | 84:6 88:10 97:10 98:10 | reconstruct |
| 126:4,16 128:8 137:6,9 | 92:12 93:17 121:7 126:22 | 106:8 107:13 108:21 | 87:4 |
| 142:20 143:8 144:11 | r | 110:16 118:8 134:18 | record |
| 145:17 146:11 152:22 | ra | 139:18 142:10 152:6 | 7:22 10:8,22 11:14 23:3 |
| 154:4 156:19 162:4 169:22 | 33:3 | 166:21 167:8 178:2 187:13 | 36:12 40:2,6 43:8 46:21 |
| puts | rage | 192:1 198:4 199:2 | 47:9,22 59:20 61:12 78:21 |
| 66:19 157:4 168:10 | 136:14 | reading | 80:12,16,18 81:3 129:18 |
| putting | range | 73:22 98:11 111:16 | 130:4,6 141:18 166:22 |
| 31:5 67:1 80:3 123:7 124:1 | 135:3,9,16,20 137:19 | reads | 173:16 174:3,4,9 175:22 |
| 124:2,22 125:5 126:13 | 149:11 183:2 | 198:4 | 178:22 193:16,19 194:1 |
| 142:2 155:1 175:16 182:4 | rate | ready | 196:16,18 199:4 200:8 |
| q | 13:9 18:2 41:15 52:15 | 97:2 152:13 | recordings |
| qualification | 58:10 59:3,6 63:8,22 65:21 | real | 166:11 |
| 12:13 | 67:8,14 69:20 70:15 71:7 | 98:19 119:21 120:5 140:12 | reduced |
| qualifications | 71:12 74:11 81:5,6,7,12 | 186:11 | 200:10 |
| 41:13 42:2,7,11 | 82:9,20 95:11,11 96:6,12 | realize | reestimated |
| qualified | 97:12,13 98:2 100:1,15 | 8:20 | 140:20 |
| 12:11 | 101:1 109:7 110:22 111:18 | realized | refer |
| qualify | 112:8 119:17 120:13 121:1 | 94:21 | 26:1 35:16 83:2 122:17 |
| 67:4 | 126:18 127:13 128:1 | really | 168:1 |
| quantify | 133:19 134:3 138:22 | 119:1 121:4 129:13 151:16 | reference |
| 95:18 96:1,13 100:3 156:3 | 139:14 147:19 148:9,19 | 157:18 172:8 190:15 | 60:17 61:3 79:9,10 114:22 |
| quantifying | 151:14 160:13 161:20 | realm | referenced |
| 95:9,15 97:11 | 162:2,10 177:13 189:3 | 64:5 | 41:12 160:18 |
| quantity | rates | realtime | references |
| 65:7 | 13:10 18:5 59:7,8,9,10 64:1 | 2:16 | 187:17 |
| quarter | 64:5 70:14 71:17 73:8,10 | reap | referencing |
| 17:19 | 73:13,16 89:16 100:18,21 | 73:18 98:17 126:14 | 172:13 |
| quarterly | 100:22 102:1,13 105:5,11 | reason | referred |
| 19:6 21:4 | 105:21 112:7 113:9 114:20 | 65:6 89:20 149:4 150:2,4 | 34:19,19 35:8 62:15 167:11 |
| question | 114:21,22 115:2,3,7 116:2 | 169:5 | referring |
| 9:9,13 27:10,17 28:5 33:18 | 116:5 123:3,4 124:1,2,18 | | 79:9 113:16 159:18 166:1 |

[referring - rules]

| | | | |
|---|--|--|---|
| referring (cont.) 179:12 195:8 | released 123:12 124:11 | represent 6:18 44:6 56:1 78:22 | right (cont.) 34:9 37:18 38:12,17 39:1 |
| refers 83:2 102:9 165:10 | relevant 22:14 35:17,20 38:5 52:6 | representatives 28:8 35:6 | 40:10 44:3 45:12 48:15 |
| reflect 43:11,18 44:1 84:1 104:10 104:22 105:1 111:6 113:12 113:20 140:18 148:11,15 | 52:16 55:5 68:19,22 88:9 89:10 108:6 122:7 124:9,10 125:1 131:10,11 133:16 134:16 135:3 146:18 149:21 151:18,19 153:21 | represented 85:4 133:11 | 50:6,7 52:3,15,17 54:21 55:7 56:20 57:5 59:13 60:15,16 61:3 63:4,7,20,21 64:5 65:3,7,13 68:16 69:17 70:3 71:9,20 74:5,11 75:3 75:15,17 76:20 89:21 91:1 |
| reflected 57:20 70:13 73:3 75:18 86:8 104:9 107:17 128:19 | 162:18 176:6 179:18,22 181:19 | representing 199:12 | 91:3,5,18,18,21 92:4,9 93:14,20 94:19 95:1 96:2 96:22 97:3,16,19 99:20 100:8,21 102:8,10 103:8,14 103:15,16 104:2,3,6,7 107:11 108:19 110:6,14 111:8 113:18 115:8 116:17 118:19 119:12,14 120:7,9 121:14,21 122:1 123:5 124:10 127:3 129:5 132:20 132:22 133:4,5 136:6 137:3 137:10,20 138:1,3,4 141:13 146:21 147:2,15 148:4 150:3,4 151:22 152:3 155:18 157:12 159:16 166:3 168:21 171:2 172:13 172:15,16 173:9 176:6,7,12 177:19 180:21 181:19 182:9 184:11 193:16 196:3 196:21 |
| reflecting 105:4 107:19 112:14 | rely 195:15 | request 9:8 | risk 23:8,10 47:4,15,18 48:11 56:2 61:19 62:3,10 96:5 169:15 170:7 171:21 172:6 172:8,12 173:5,13 |
| reflection 76:16 | remained 143:22 144:15,20 | require 95:16 | rix 29:18 |
| reflects 74:19 137:8 | remaining 66:14 82:5 | requires 95:10 97:11 | rmr 1:22 200:21 |
| refresh 119:6 | remedy 116:11 | research 28:22 29:9 33:3 79:21,22 80:3,8 84:18 | road 117:17 |
| regard 57:1 136:13 140:5 148:20 149:2 170:12 173:13 | remember 14:12 18:18,21 19:2 133:13 161:2 184:9 189:15 | reserved 76:13 | role 62:4 |
| regarding 151:19 | repeat 60:21 77:4 | residential 12:20 | roman 46:11 65:19 |
| regime 84:2 | rephrase 9:15 24:14 44:14 64:14 86:13 89:6 101:6 | response 143:5,5 186:10 | ross 127:13 |
| registered 2:15,15 | report 5:12 11:15 15:19,21 16:2 16:10 17:15 22:16 30:8,9 30:14,17,21 32:6,13,22 33:6,10 34:4,7,9,15,17,20 35:9 37:9,13 38:3,11,17,17 38:20,20 39:1,5,5,11 40:10 40:13 42:19 45:9 46:2 48:15 52:5,10 53:15 54:11 60:5 61:9 67:19 68:3 69:9 71:1,5 74:1,7,13,16 79:8 80:19 83:2 85:12 87:20 93:8 95:9 123:2 124:16 126:7,10,15,20 127:6 128:18 130:8,13 147:9 160:18,22 165:3 167:15 169:1 174:12 200:6 | result 14:19 51:22 65:9 94:12 123:7,10 150:22 | roughs 196:21,22 |
| registrant 62:18 | | resulted 121:1 179:20 | rpr 1:22 200:21 |
| regulated 63:1 | | resulting 72:12 93:3 94:22 189:4 | rule 5:13 49:3 59:21 60:7,15 76:10,19 77:12 93:17 182:10 |
| regulation 169:14 | | results 121:3 127:16 139:11 140:1 140:7 171:1 | rules 8:17 50:8,19 51:2 61:14 |
| regulator 170:17,17 171:2 | | resumed 40:4 80:14 174:7 193:21 | |
| regulators 169:1,7 170:13 | | resumes 41:21 | |
| regulatory 19:11 | | retained 12:1 | |
| reiterating 152:13 | | retroactively 117:22 | |
| relate 28:8 71:19 | | reveal 15:6 | |
| related 22:5 25:21 39:15 96:6 130:17 154:20 159:7 161:17 200:12 | reported 1:22 | reversed 186:16 | |
| relating 160:7 | reporter 2:15,16,16 6:14 7:13 8:21 9:4 61:2 77:7 109:17 164:7 189:21 196:17 197:1 200:1 | review 15:19 19:7 43:3 81:1 101:15 106:9 134:20 143:19 174:12,14 | |
| relation 23:20 | reporters 2:17 | reviewed 34:8 78:5 79:19 | |
| relationship 61:10 | reporting 6:16 | right 18:13 20:22 26:19 30:14 | |
| relative 37:16 70:7 105:5 190:17 | reports 12:3 13:7 71:19 188:10 | | |

[rules - sizes]

| | | | |
|----------------------------|---------------------------|----------------------------|----------------------------|
| rules (cont.) | second (cont.) | series | shorthand |
| 169:17 194:20 | 185:5 | 42:19 80:20 85:21 191:20 | 200:1 |
| run | seconds | serious | shorts |
| 61:17 | 153:2,3 155:4 | 165:8 | 108:15 150:14 |
| running | section | service | show |
| 31:4 101:12 | 46:12 58:9 169:2 185:4 | 156:8 | 87:19 127:16 189:11 |
| runs | securities | session | 190:12 |
| 23:21 | 12:20 13:4 17:4 18:3 | 5:4 130:1 | showed |
| rush | 151:14 160:13 161:21 | set | 84:10 |
| 196:22 | security | 50:14 106:1 169:17 194:20 | shown |
| s | 48:7 133:19 | 200:15 | 82:18,20 83:11 87:14 88:5 |
| safe | seeing | settle | 92:5 165:8 |
| 20:19 29:3 | 88:21 189:15 | 116:1 119:3 137:5 157:14 | shows |
| sake | seen | 163:22 | 83:19 123:21 125:17 |
| 25:22 171:6 | 10:19 70:12 78:8 164:13 | settled | 135:10 177:12 182:5 |
| samir | 165:2 166:8 190:16 | 92:10 117:7,9 122:4 | shrugs |
| 33:11 | sell | settlement | 9:5 |
| sand | 44:18,20 73:17 97:2 98:17 | 35:7 48:4 50:14,22 51:8,9 | siddiqui |
| 80:4 | 120:19 157:5 | 51:10 60:1 69:12 76:11,14 | 3:5 6:22,22 190:4 192:11 |
| sarcastic | sellers | 77:13,14 78:1 86:4,9 103:1 | side |
| 173:16 176:9 | 63:10 | 104:10 107:17 113:11,19 | 8:13 15:4 21:8 28:11 36:17 |
| savings | selling | 114:8 115:7 116:16 117:2 | 47:12,17 72:22 73:1 101:3 |
| 118:18 | 94:16 | 117:18 126:14 137:13 | 105:6 127:2 150:8 157:4 |
| saw | send | 144:2 145:3,4,6 179:21 | 192:21 |
| 88:14 126:21 158:16 | 154:14 | 181:17,22 187:9,11 194:17 | sided |
| saying | sending | 194:18,21 | 168:14,14 |
| 37:2 43:21 71:5 74:13 | 154:14 | settling | sides |
| 102:11 112:3,13 117:4 | sends | 83:22 116:5,7,10 119:11 | 54:21 |
| 159:17 179:1 | 113:2 | seven | signature |
| says | senior | 49:21 85:13 94:6 108:8,10 | 11:5,6 197:4 199:10 |
| 18:9 38:17,20,21 69:9 74:7 | 42:5 | 108:11,11 | similar |
| 77:12 101:19 104:20 111:5 | sense | share | 22:12 113:3 119:20 126:9 |
| 112:10 120:17 123:2 | 11:21 13:2 26:3 44:5 48:4 | 190:3 | 127:18 190:17 |
| 124:16 134:22 139:10 | 127:11 138:21 158:4 | shared | simple |
| 165:19 | sensitive | 22:7 | 73:13 156:5 |
| scenes | 64:1 130:22 133:19 139:1 | shares | simply |
| 30:20 31:1 56:19 57:22 | 151:14 160:13 161:20 | 28:22 | 139:2,3 158:5 |
| 92:1 122:16 | sent | sharing | simulated |
| scholarly | 33:2 122:12 | 80:8 | 128:1 140:4 |
| 168:2 | sentence | sharma | simulations |
| science | 97:9 101:19 102:5,6,9 | 3:15 | 128:3 |
| 126:16 | 103:10 104:8,19 106:12 | shay | single |
| sciences | 107:15 113:14 114:20 | 5:19 | 73:2 |
| 79:21,22 | 115:4 120:16 134:22 135:5 | sheet | sit |
| scope | 135:6 139:10 143:21 159:4 | 199:6 | 18:15 41:22 42:8 46:16 |
| 37:10 | 159:12,19 175:3 176:22 | sheets | 66:6 102:6 109:11 141:7 |
| screen | 178:11,14 179:17 190:20 | 85:9 | sits |
| 88:21 89:13 92:5 142:17 | separate | shifted | 54:20 |
| 143:11 158:16 | 195:20 199:6 | 83:21 133:18 | sitting |
| searching | separately | short | 58:4 |
| 33:3 183:10,11 | 23:21 63:1 | 54:21,22 59:9,11 72:17,22 | six |
| second | september | 74:11 101:10 103:3 105:6 | 52:16 122:13 |
| 9:2 11:13 18:22 49:4 60:2 | 1:17 6:10 69:2,19 72:14 | 106:17 107:20 108:12 | size |
| 62:14,16 80:22 81:1 101:19 | 73:3 75:11 79:1 100:11 | 150:8 151:3 154:10 192:21 | 51:10 56:10 58:2 92:2 |
| 103:10 134:19 139:10 | 133:12,17 200:16 | 194:7 | sizes |
| 151:8 159:12,19 162:21 | | | 65:12 164:1 |

[skips - supply]

| | | | |
|--|---|--|--|
| skips 192:4 | speaking 114:16 | stands 23:7 | structure 21:15 51:20 |
| slate 163:15 | speaks 38:17 93:6 | start 11:22 43:6 49:8 81:16 121:19 142:5,6 167:7 185:14,15 | study 180:17 195:11,13 |
| slight 96:22 | specific 33:17 34:12 60:7 63:15 78:15 85:18 104:1,4 123:6 124:6 125:5 136:5 158:7,10 161:13 173:5 176:15 195:16 | started 18:19 20:2 86:16 100:8 153:22 175:16 183:7 | stuff 143:15 |
| slope 96:2 | | starting 18:12 46:11 53:11 121:20 | subject 12:17 14:12 |
| sloping 71:16 95:19,20 | specifically 13:3 32:12,14 33:19 34:13 95:8 116:17 135:22 139:6 184:9 | startup 18:4 20:11 | submit 145:13 |
| small 184:20 | specifications 66:17,18 88:3 113:4 | state 6:18 7:21 38:15 97:10 196:17 | submitting 145:14 |
| social 79:21,22 | specifics 91:20 125:4 135:13 143:7 186:20 | stated 109:2 112:4 | subparagraph 149:15 |
| sole 76:14 | spectrum 51:19 | statement 64:18 66:5 99:12 126:6 128:21 149:6 159:18 162:8 169:9 176:2 179:3,5 194:15 196:7 | subpoena 2:14 5:9 10:9,12 |
| solicits 28:22 | spent 21:15 48:13 151:7 153:16 | statements 16:6 37:3 124:3 125:8 145:19 179:1 | subrahmanyam 83:18 |
| soll 127:13 | spirit 126:9 | states 1:1,5 6:5,7 | subscribed 158:11 |
| somebody 90:22 94:17,18 96:22 105:15 143:1 149:1 154:15 155:1 172:2 | sponsors 28:21 | stay 184:16 | subsequently 174:17 |
| sophia 3:5 6:22 | spoofing 146:2 | stem 140:16 | subsidiary 24:15 |
| sophisticated 78:18 | spot 181:14 | stems 64:13,15 | substantial 132:11 |
| sorry 24:14 25:13 28:4 30:7,10 32:1 33:13 50:2 60:21 75:10 90:15 112:8 143:18 151:16 159:11 161:11 164:19 176:15 | spread 133:3 134:3 139:4 | stenographically 200:10 | success 64:8 |
| sort 16:15 21:14 22:11 25:20 31:6 33:3 44:4 45:21 49:20 80:4 101:9 129:6 142:18 145:13 156:22 181:1 187:5 195:14 | spreads 180:9 195:17 196:9 | stephenson 5:17 | suffering 154:1 |
| sorts 65:12 | spring 29:17 | steps 157:3 | suffices 50:4 |
| sound 52:17 188:6 | st 6:9 | steve 21:20,21 22:10 | sufficiently 152:9 |
| sounds 188:5 | stable 163:2 | stipulation 200:5 | suggest 175:4,5,20 |
| source 88:17 155:9 162:18 175:8 | stage 25:10 62:20 | stochastic 41:15 | suggested 179:9 186:2,3 |
| sources 44:1 168:2 | stages 161:5 | straight 173:17 | suggesting 192:22 |
| south 4:7 | stakes 25:14 | strange 187:17 | suggests 119:8 183:5 |
| southern 1:2 6:8 28:17,19 | stamped 190:11 | strategy 98:9 101:10 172:10 | sum 20:16 142:6 |
| speak 78:9 157:18 176:3 | stand 24:5 31:14 97:2 177:21 | streaming 86:16 | summarize 38:22 |
| | standing 36:7 196:19 | street 2:6 3:8 4:16 6:12 8:3 | summary 39:4 54:17 87:12 115:14 180:1 |
| | | | supervision 200:11 |
| | | | supply 43:11,13 44:1,3,8,16,18 45:2,19 113:12,20 114:5,11 120:14 121:10,13 138:6,11 138:12,20,22 159:6 173:10 |

[supply - three]

| | | | |
|----------------------------|-----------------------------|----------------------------|-----------------------------|
| supply (cont.) | talk | term | think (cont.) |
| 175:8 | 8:21 40:8 58:6 69:1,2 70:17 | 51:19 101:10 186:6 | 67:19 71:11 72:15 74:6 |
| support | 83:5 85:9 106:10 111:8 | terms | 76:7 77:19 83:3,6,11 84:3,4 |
| 112:16 163:9 | 121:20 125:15 130:12 | 13:7 54:15 58:21 70:6 | 84:18 85:12,13 87:17,18,19 |
| supported | 141:20,20 142:5 168:22 | 73:12 88:8 90:12 93:11 | 87:21 88:4,4,13,20 90:2,8 |
| 175:21 181:8 | 170:4 | 94:20 103:12 104:5 107:4 | 90:10 92:10 93:6,8,9,15,17 |
| sure | talked | 116:18,20 117:18 124:16 | 96:13 97:5,14 98:6 99:19 |
| 11:3 14:8 21:13 23:10,16 | 22:1 36:10 40:15,18 92:19 | 124:18 125:4 143:6,8 146:1 | 99:21 100:7 103:19 105:15 |
| 25:9,19 26:4 27:11 28:12 | 92:22 133:10 195:14 | 150:10,12 156:5 180:20 | 105:22 106:1 107:1 108:5 |
| 34:18 37:10,11 38:11 39:2 | talking | test | 115:10 116:14 117:13,15 |
| 43:10,15 47:3,12 53:20 | 24:21 41:19 67:9 70:19 | 141:15 | 117:16 118:13 123:2 126:7 |
| 55:17 57:14,19 62:9,19 | 86:4 102:15 103:11,12 | testified | 132:8 133:10,21 137:6 |
| 73:6 77:11 81:5 84:12 | 107:7 117:4,5 121:19 | 7:17 12:8 30:13 32:12 43:6 | 139:5 140:17 142:9 150:1 |
| 103:19 108:18 118:13 | 122:13 136:20,21 137:2 | 54:10,19 55:3 72:1 74:6 | 152:4 155:3,14,17,21 157:7 |
| 121:3 128:17 132:2 135:12 | 142:11 165:7 169:4 172:22 | 97:14 109:12 115:10 123:3 | 160:14 164:14 166:14 |
| 140:2 141:5 155:18 169:15 | 178:5 | 133:10 149:19 166:14 | 167:19 168:9,19 169:20 |
| 170:18 173:16 180:16 | talks | 179:18 181:16 191:18 | 171:1 173:8 175:12 178:5 |
| 183:19 189:17 192:13 | 17:19 28:16 71:1 93:1 | 194:10 195:4,6 | 178:22 180:2 182:19,19 |
| surprising | 111:16 156:4 168:7,8,10 | testifies | 183:22 184:14,18,21 186:3 |
| 139:13 140:7 | tautology | 110:20 | 187:10 188:11 189:16 |
| suspect | 116:6 | testify | 193:10,13 194:19 195:2 |
| 145:16 | teach | 5:9 10:9 34:22 36:9 | thinly |
| swap | 22:7 29:17 | testifying | 153:17,19 156:13 168:4 |
| 58:15 65:21 67:14 68:16 | teaching | 133:22 | 195:6,19,21 |
| 70:14,15 73:20 75:16,17 | 22:8 | testimony | third |
| 81:5,6,8 87:9,9 90:3 95:12 | technical | 10:12 20:20 36:22 37:7 | 3:17 174:18 |
| 97:13 109:8 111:1 114:1 | 32:15 | 43:20 52:9 54:17 87:13 | thirds |
| 119:17 120:13 121:1,15 | technicality | 107:16 111:20 142:9 | 174:16 |
| 132:20 148:9 | 62:1 | 149:14,15 150:1 168:19 | thought |
| swaps | technically | 180:1,4 195:9 199:4 | 36:15 40:21 80:7 122:6 |
| 12:21 18:5 22:6 58:10 | 47:13 | testing | 141:14 170:20 186:9 190:7 |
| 111:19 112:9 114:4 | technique | 180:14 | 190:21 191:5,11 |
| swaption | 41:6 56:2 57:12 103:4 | thank | three |
| 140:10,11,19 | techniques | 11:8 146:20 180:10 192:18 | 35:8 39:12 48:14,15,18 |
| swaptions | 127:10 | 194:4,5 196:11,13 | 49:6,17,21 50:9,20 52:6,21 |
| 128:13 161:6 | telephone | thanks | 53:2,5,8 58:12,13,20 59:2 |
| sworn | 5:20 | 129:16 192:17 | 59:21 60:13,20 61:6 65:20 |
| 7:16 200:4 | tell | theirs | 66:1,9,11,20,21 67:7,12 |
| synergistic | 22:21 36:13 71:4 123:16 | 140:8,15 | 68:2,5,15 69:6,12 70:7 75:5 |
| 23:20 | 189:18 | theory | 78:4,6,13 79:4 86:3,12,15 |
| synonymous | telling | 173:4 | 87:2,14 88:8 97:15,17 99:1 |
| 177:7 | 126:12 | thing | 99:16 101:20,21 104:5,11 |
| system | tells | 8:19,19 31:6 97:6 104:21 | 104:20 105:3,10,19 106:5 |
| 142:13 145:13 | 156:19 | 104:22 114:10 119:7 | 106:21 107:6 108:3 109:6 |
| systems | ten | 127:21 138:17 149:2 | 110:21 111:17 112:7 |
| 146:10 154:13,21 163:2 | 49:22 80:9 85:10,13 94:7 | things | 113:10,13 114:11,22 |
| 184:21 | tenets | 16:4,5,8,16 87:3 112:22 | 115:13 116:1 119:16 |
| t | 156:6 | 113:3 132:13 180:14 181:9 | 120:13,22 121:5,7,13 |
| tables | tenor | 195:14 | 124:17 130:17 131:1,3,5,21 |
| 31:5 32:21 | 52:1,2 105:19 136:1 | think | 134:10,12 135:1 138:7 |
| tahiti | tenors | 12:16 16:3,3,12 20:2,16 | 141:9 144:6 151:19 159:18 |
| 147:22 148:2 | 48:18 49:20,22 50:6 51:18 | 22:10 27:5 31:20 32:2 | 159:22 160:9 161:16,16 |
| taken | 85:22 179:21 183:7 189:3 | 36:21 37:1,1,21 38:7 43:5 | 162:5,7,10,17,19 163:6 |
| 6:4 8:5 40:3 80:13 129:20 | tension | 45:2,17 46:6,8 50:4 52:18 | 167:12 175:9 178:12 |
| 174:6 193:20 200:3,9 | 62:6 | 53:6 54:10,13 55:12,15 | 179:21 181:18 184:8 |
| | | 56:11,13 57:17 63:21 67:11 | 186:12 |

[time - use]

| | | | |
|-----------------------------|-----------------------------|----------------------------|----------------------------|
| time | trader | true | um |
| 6:11 9:7 40:2,6 48:13 50:21 | 142:16 155:15,16 | 11:17 45:3 57:1 59:12 | 42:14 62:12 86:5 105:13 |
| 63:6 66:14,17 68:19 72:2 | traders | 104:11,14 105:1 109:12 | 135:19 146:19 150:9 155:6 |
| 78:3,10,13,16 80:12,16 | 23:7,9 114:16 123:10 | 113:12,20 114:10 139:18 | 181:4 |
| 83:21 84:20 85:21 86:10 | 125:14 141:8,10 145:15 | 182:21 199:3 200:8 | umbrella |
| 94:14 118:17,18 121:8 | 147:21 181:12 | trust | 24:8,14,16,18,20,21,22 |
| 122:11 123:14 124:7 | trades | 179:9 | 25:5,17 26:1,1 29:7 |
| 129:18 130:4 132:11,14 | 14:17 93:5,8,14,16 94:15 | truth | uncertainty |
| 152:9,12,18 153:6,6,16 | 101:6 130:17,20 131:2,4,12 | 126:13 189:18 | 157:1 179:10 183:2 |
| 154:8,19,21 155:5 158:19 | 132:7 134:12 171:11 | try | underlying |
| 165:12 166:15 171:9,13 | 173:12 193:1 | 22:18 29:7 32:16 83:2 96:1 | 45:13 63:19 65:2 |
| 174:5,9 185:10 193:19 | trading | 96:13 97:6 107:2 126:16 | underneath |
| 194:1,4 196:14,16 | 1:6 2:5 3:7 4:15 6:6,21 7:1 | 132:16 145:12 154:4 | 28:16 |
| times | 7:4 17:9 26:8,9 39:17 48:5 | 170:13 181:7,9 184:18 | underpinned |
| 11:22 | 49:17 52:11,12 54:3 56:6 | trying | 152:16 |
| timestamp | 57:11 61:14,18 62:5,8 89:3 | 53:19 62:4 63:9 67:5 | understand |
| 80:6 | 89:18,21 90:1 91:4,8 | 125:15 126:8,14 129:2 | 8:22 9:5,10,13,14,16 10:11 |
| timing | 105:19 121:4 143:22 | 161:2,7,13,14 170:10 | 15:8,13 20:15 22:17,20 |
| 123:18,18 | 145:22 152:20 153:13,14 | 173:15 176:8 184:16 | 24:17 33:22 35:11,20 37:2 |
| today | 153:14 172:4,10 185:14,15 | 195:17 | 37:10 43:9 50:2,5 51:17 |
| 7:10 10:10,12 18:15 34:22 | 195:12 | turn | 52:10 58:19 61:11 68:21 |
| 41:22 42:8 46:17 66:6 96:8 | transaction | 42:18 134:17 135:11 | 74:12 76:22 77:8 84:2 |
| 102:6 109:11 141:7 | 14:15 47:13 136:12 151:17 | 174:11 176:13 185:3 | 89:14 91:15,22 93:2 117:7 |
| today's | 159:7 163:19 171:17 173:3 | type | 119:1,10 124:17,19,21 |
| 6:10 141:1 | 179:4,8 185:21 186:15 | 51:14 63:15 151:17 | 128:17 141:10 167:2 176:5 |
| tomorrow | transactions | types | understanding |
| 197:2 | 47:14 151:13 156:22 | 185:7 195:8,15,20 | 22:12,12 34:21 35:3,14 |
| top | 159:21 160:2 161:21 | typewriting | 43:16,22 44:7,11 45:5,8 |
| 24:9 37:10 164:18,21 | 162:16 171:19 184:22 | 200:11 | 48:17,21 49:5,16 51:5 |
| topic | transcribed | typically | 53:22 55:4,8 58:10 60:8,12 |
| 143:16 | 8:20 | 48:2 61:13,16 93:22 104:16 | 69:11,13,14 72:10 78:6,10 |
| total | transcript | 105:1 128:4 141:1 171:3 | 83:20 84:11 92:13 93:4 |
| 11:19 20:16 58:4 157:1 | 110:8,10,19 199:3,7 200:7 | 181:7 | 108:2 115:12 133:7 141:3,6 |
| touched | transfer | typo | 141:22 142:7 144:5 180:11 |
| 141:4 | 170:6 | 33:6 | understood |
| trace | transferred | u | 21:14,14 55:13 78:12 79:4 |
| 140:17 | 75:1 | u.s. | 85:3 115:22 120:4 133:15 |
| trade | translated | 14:9 | 157:12,13 186:22 |
| 14:10,14 18:2 22:6 23:9 | 86:9 160:15 | ullman | unfair |
| 47:17 49:11 53:2,7 63:10 | translates | 3:4 5:3 6:20,20 7:19 10:3 | 117:15 |
| 69:8 76:6,7,8 88:1 90:12,17 | 77:16 143:11 | 10:18 11:12 25:3 36:7,11 | unilateral |
| 90:18,19 91:2,9,10,11,13 | transmission | 38:22 39:3,21 40:7 42:13 | 156:12 168:3,3 |
| 91:14,15,17,18,20 92:15,17 | 174:19 | 45:20 46:9 56:17 59:18 | uniquely |
| 93:22 94:1 98:3 119:9,11 | transmissions | 60:22 61:8 65:4 70:16 | 61:18 |
| 120:19 131:16 132:12 | 175:14 | 71:13 74:21 75:9 77:5,18 | united |
| 142:19 144:2 146:6,12 | trema | 79:14 80:9,17 88:6 92:8 | 1:1,5 6:5,7 |
| 151:4 152:13,15 155:16 | 29:18 | 100:17 102:20 109:16,20 | university |
| 163:17 165:13 167:3 173:1 | trial | 116:19 118:6 128:9 129:14 | 29:15 |
| 173:2,2 183:3 | 12:8 | 130:5 134:13 137:1 138:15 | unwinding |
| traded | trick | 145:20 146:19 147:1 152:2 | 186:18 187:12 |
| 17:2 48:2 75:21 94:8 96:17 | 192:6 | 157:20 160:20 164:6,8,9 | upfront |
| 96:21 114:2,14 121:15 | tried | 166:7 167:22 173:14 | 81:8 |
| 126:17 128:14 142:22 | 67:18 85:19 93:7 116:15 | 174:10 176:4 182:2 187:22 | upward |
| 153:17,19 156:13 161:16 | 147:8 | 188:22 189:20 190:5,9 | 71:15 95:19 |
| 168:4 195:6,19,21 | trimming | 192:6,9,13,17,19 194:2 | use |
| | 20:12 | 196:13,20 197:3 | 35:21 74:4 91:7 127:14 |

[use - wondering]

| | | | |
|-----------------------------|---------------------------|----------------------------|----------------------------|
| use (cont.) | variability | vis | ways (cont.) |
| 128:3,6,10 130:13,16 140:3 | 127:14 | 71:7,7 74:11,11 | 145:12 |
| 140:4 154:21 156:17 | variable | visible | wednesday |
| 180:13,14 | 59:7 | 138:11 143:12 | 1:17 |
| uses | variables | vitae | week |
| 138:20 | 134:2 | 14:5 | 36:2 132:14,14 |
| usually | variation | voice | went |
| 94:17 136:14 142:17 | 46:22 47:1,6,10 48:22 | 53:6 68:20,22 69:6 72:2 | 22:10 40:13 73:8,16 92:1 |
| 182:20,21 195:13 | 54:11,12,14 55:10,20,22 | 91:17 | 128:13 156:21 |
| <hr/> v <hr/> | 57:18,20 60:17 61:4 65:22 | volatility | west |
| valid | 67:13 70:2 71:20 72:3,13 | 71:17 96:6,12 99:22 100:21 | 4:16 |
| 44:22 177:10 | 72:20 73:11,21 74:4,22 | 185:13,15 | we've |
| valuable | 101:2,5,8 106:2 111:6 | volume | 153:12 174:2 |
| 155:14,17 | 112:13 136:18 | 91:4,8 | wheat |
| valuating | variations | volumetric | 65:16,17 |
| 52:1 | 65:12 | 195:14 | whereof |
| valuation | varied | vouch | 200:15 |
| 50:16,22 56:12 58:1 60:19 | 21:3 187:2 | 136:6 | white |
| 61:6 67:3 70:5,19,20 71:7 | various | vs | 41:5 78:17 122:5 127:8,11 |
| 72:13 74:7 77:1,8 78:18 | 48:18 63:12 179:21 | 1:8 | 127:12,15,17,22 129:12 |
| 79:5 88:2,3,8,18 109:6 | vasicek | <hr/> w <hr/> | willing |
| 110:21 111:9,12,17 112:6 | 127:13 | waived | 44:20 120:18,19 148:22 |
| 115:12,20 121:3 127:18 | vastly | 197:4 | 156:19 157:5 186:5 |
| 134:11,22 139:11 142:18 | 63:17 | walk | willingness |
| 142:19 150:15,17,18 196:4 | vendor | 52:4 191:6 | 105:4 |
| valuations | 142:14 | want | wilson |
| 83:21 | vendors | 15:6 17:18 20:15 33:17,19 | 1:9 5:20 6:6 7:7 25:6,16 |
| value | 174:18 175:13 | 33:20 36:8 37:9 38:14 40:8 | 26:20 27:1 35:15 118:16 |
| 44:6 47:5 50:12 51:7,11,15 | venue | 42:20 43:18 46:10 53:20 | 119:1 166:12,15,16 198:2 |
| 54:1,4,7 55:15 56:1,5,15,20 | 80:2,8 104:17 | 55:17 56:4 63:10 78:20 | window |
| 57:3,10,13 58:1,4 60:13 | verb | 95:17,18 96:9,20 97:1,3 | 152:12,17 |
| 65:20 66:9,9,11,21 67:4,6,9 | 33:7 | 101:10 111:15 115:18 | winning |
| 67:11,17,20,20 72:21,22 | verbally | 135:11,14 151:3 153:4,7 | 74:3,9 |
| 73:7,9,19 74:19 75:18 | 9:3 | 154:16 155:2 169:11 170:5 | withhold |
| 77:16 81:4,18 82:1,1,5 | verify | 171:15 173:16 182:14,17 | 193:1 |
| 84:22 96:9,13 97:6,7 98:15 | 123:16 | 184:1,19 187:4 190:11,12 | witness |
| 99:7,21 100:10 101:21 | version | 197:1 | 5:2 8:10 10:2 11:20 12:1,9 |
| 102:2,13 103:3,13 104:11 | 192:3 | wanted | 12:12 13:12,15,19 25:2 |
| 104:15 105:1 111:14 | versus | 21:13 40:18 66:13 98:17 | 38:15 42:10 45:12 46:6 |
| 113:12 114:11,12,13 | 14:10 81:6 | 114:18 128:3 141:17 | 56:9 61:7 64:20 70:9 71:11 |
| 119:21 120:5 124:14 129:9 | vetted | 189:12 195:10 | 74:18 75:15 77:11 79:13 |
| 131:21 132:19 135:16 | 62:9 | wanting | 87:17 100:14 102:18 |
| 137:8 148:11,11,15,16 | vi | 183:11 | 116:14 127:10 129:11 |
| 149:8,13 150:18 173:5 | 46:12 | wants | 134:9 138:10 145:12 |
| 176:20 177:2,7,13,20 | video | 44:18 47:11 62:7,8 105:15 | 146:21 151:22 157:17 |
| 179:11 182:5 184:5 185:11 | 6:3 7:12 40:1,5 80:11,15 | 120:8 155:16 | 167:19 173:8 176:2 181:21 |
| 185:16 186:8 187:6,6 189:9 | 129:17 130:3 174:4,8 | warty | 187:20 188:20 192:5 200:4 |
| valued | 193:18,22 196:15 | 33:11 | 200:15 |
| 51:6,17 52:11 | videographer | washington | woman |
| values | 6:15 | 1:16 2:7 3:9 6:12 8:4 | 122:16 |
| 119:18 | videotaped | watched | won |
| valuing | 1:14 6:4 | 143:14 | 101:5 |
| 50:9,20 55:9 119:19,20 | view | watching | wonder |
| 128:15 | 16:11 153:6 | 116:6 | 88:16 |
| vander | vii | ways | wondering |
| 5:16 141:12,13,21 143:6 | 65:19 | 102:21 103:17 140:12 | 183:22 |

[word - zero]

| | |
|---------------------------|----------------------------|
| word | yeah (cont.) |
| 11:3 66:9 98:10 | 137:4,4,13 141:13 142:6 |
| words | 146:5,7 148:3 158:22 159:3 |
| 26:17 43:19 56:4 111:22 | 160:10 161:2,11,11 165:10 |
| 137:9 146:2 154:7 169:21 | 166:1 167:5,19 170:22 |
| work | 171:12 172:21 177:9 180:2 |
| 21:1,8 31:12 40:13 85:20 | 181:22 182:19 183:19 |
| 122:16 127:4,6 153:18,20 | 184:17 189:1 192:15 196:1 |
| worked | year |
| 21:22 164:16 | 8:14 11:16 20:1,17,21 21:1 |
| working | 21:9,11,12 49:21,21 85:10 |
| 37:11,15 80:5,6 153:16 | 85:13,17 |
| works | yearly |
| 131:15 | 19:19 |
| world | years |
| 31:17 32:2 90:9,10 186:11 | 20:7,16 21:3 94:7 |
| worldwide | yesterday's |
| 153:15 | 140:22 |
| worry | yield |
| 158:2 | 71:16 95:19,20,22 107:21 |
| worth | 108:12 138:2 |
| 68:5 96:2 147:14 157:2 | yields |
| write | 105:3,9 107:19 136:2 |
| 65:20 76:12 106:13 107:15 | york |
| 109:1 113:8 119:15 123:13 | 1:2 3:18,18 6:8 |
| 139:10 144:15 148:7 156:5 | |
| 162:16 174:17 175:3,19 | z |
| 176:18 177:19 178:12 | |
| writes | zero |
| 119:1 | 81:21 98:7,13 157:7 |
| writing | |
| 112:17 | |
| written | |
| 12:2 13:8 126:20 | |
| wrong | |
| 33:7 69:10 | |
| wrongly | |
| 151:5 | |
| wrote | |
| 146:9 167:15 | |

y

yeah
8:1 14:9 19:5 24:7 29:5,8
37:21 38:22 39:7 40:14
46:6 49:8,10,12 52:18
58:13 63:8,11 64:3,20
65:11 67:11 69:14 71:11,21
71:21 72:11 73:20,22 79:15
83:17 90:8,8,20 91:6,22
93:21 94:3,9 96:18 98:3,12
100:20 105:22 108:10,14
111:15 113:18 114:9
115:18 116:5 119:13
120:10 122:4 124:6 125:13
129:11,11 131:4 132:22
133:19 134:10 136:13

Exhibit 1



AO 88A (Rev. 12/13) Subpoena to Testify at a Deposition in a Civil Action

UNITED STATES DISTRICT COURT

for the

Southern District of New York

U.S. Commodity Futures Trading Commission

Plaintiff

v.

Donald R. Wilson, Jr. and DRW Investments, LLC

Defendant

Civil Action No. 13-cv-7884

SUBPOENA TO TESTIFY AT A DEPOSITION IN A CIVIL ACTION

To:

Matthew Evans c/o Kobre & Kim LLP
 800 Third Avenue, New York, NY 10022
 (Name of person to whom this subpoena is directed)

☒ **Testimony:** **YOU ARE COMMANDED** to appear at the time, date, and place set forth below to testify at a deposition to be taken in this civil action. If you are an organization, you must designate one or more officers, directors, or managing agents, or designate other persons who consent to testify on your behalf about the following matters, or those set forth in an attachment:

Place: U.S. Commodity Futures Trading Commission
 140 Broadway
 New York, New York 10005

Date and Time:

08/28/2015 10:00 am

The deposition will be recorded by this method: Stenographic and Videotape

☐ **Production:** You, or your representatives, must also bring with you to the deposition the following documents, electronically stored information, or objects, and must permit inspection, copying, testing, or sampling of the material:

The following provisions of Fed. R. Civ. P. 45 are attached – Rule 45(c), relating to the place of compliance; Rule 45(d), relating to your protection as a person subject to a subpoena; and Rule 45(e) and (g), relating to your duty to respond to this subpoena and the potential consequences of not doing so.

Date: 08/20/2015

CLERK OF COURT

OR

Signature of Clerk or Deputy Clerk

Attorney's signature

The name, address, e-mail address, and telephone number of the attorney representing (name of party)

U.S. Commodity Futures Trading Commission, who issues or requests this subpoena, are:

Sophia Siddiqui, Esq., U.S. Commodity Futures Trading Commission, 1155 21st Street, N.W., Washington, D.C. 20581,
 (202) 418-6774, ssiddiqui@cftc.gov

Notice to the person who issues or requests this subpoena

If this subpoena commands the production of documents, electronically stored information, or tangible things, a notice and a copy of the subpoena must be served on each party in this case before it is served on the person to whom it is directed. Fed. R. Civ. P. 45(a)(4).

AO 88A (Rev. 12/13) Subpoena to Testify at a Deposition in a Civil Action (Page 2)

Civil Action No. 13-cv-7884

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 45.)

I received this subpoena for (name of individual and title, if any) Matthew Evans
on (date) _____.

☒ I served the subpoena by delivering a copy to the named individual as follows: Matthew Evans
c/o Kobre & Kim LLP 800 Third Avenue, New York, NY 10022
_____ on (date) 08/20/2015 ; or

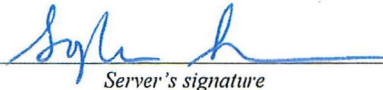
☐ I returned the subpoena unexecuted because: _____

Unless the subpoena was issued on behalf of the United States, or one of its officers or agents, I have also
tendered to the witness the fees for one day's attendance, and the mileage allowed by law, in the amount of
\$ _____.

My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ 0.00.

I declare under penalty of perjury that this information is true.

Date: 08/20/2015



Server's signature

Sophia Siddiqui, Esq.

Printed name and title

U.S. Commodity Futures Trading Commission
1155 21st Street, N.W.
Washington, D.C. 20581

Server's address

Additional information regarding attempted service, etc.:

Federal Rule of Civil Procedure 45 (c), (d), (e), and (g) (Effective 12/1/13)**(c) Place of Compliance.**

(1) For a Trial, Hearing, or Deposition. A subpoena may command a person to attend a trial, hearing, or deposition only as follows:

- (A) within 100 miles of where the person resides, is employed, or regularly transacts business in person; or
- (B) within the state where the person resides, is employed, or regularly transacts business in person, if the person
 - (i) is a party or a party's officer; or
 - (ii) is commanded to attend a trial and would not incur substantial expense.

(2) For Other Discovery. A subpoena may command:

- (A) production of documents, electronically stored information, or tangible things at a place within 100 miles of where the person resides, is employed, or regularly transacts business in person; and
- (B) inspection of premises at the premises to be inspected.

(d) Protecting a Person Subject to a Subpoena; Enforcement.

(1) Avoiding Undue Burden or Expense; Sanctions. A party or attorney responsible for issuing and serving a subpoena must take reasonable steps to avoid imposing undue burden or expense on a person subject to the subpoena. The court for the district where compliance is required must enforce this duty and impose an appropriate sanction—which may include lost earnings and reasonable attorney's fees—on a party or attorney who fails to comply.

(2) Command to Produce Materials or Permit Inspection.

(A) Appearance Not Required. A person commanded to produce documents, electronically stored information, or tangible things, or to permit the inspection of premises, need not appear in person at the place of production or inspection unless also commanded to appear for a deposition, hearing, or trial.

(B) Objections. A person commanded to produce documents or tangible things or to permit inspection may serve on the party or attorney designated in the subpoena a written objection to inspecting, copying, testing, or sampling any or all of the materials or to inspecting the premises—or to producing electronically stored information in the form or forms requested. The objection must be served before the earlier of the time specified for compliance or 14 days after the subpoena is served. If an objection is made, the following rules apply:

- (i) At any time, on notice to the commanded person, the serving party may move the court for the district where compliance is required for an order compelling production or inspection.
- (ii) These acts may be required only as directed in the order, and the order must protect a person who is neither a party nor a party's officer from significant expense resulting from compliance.

(3) Quashing or Modifying a Subpoena.

(A) When Required. On timely motion, the court for the district where compliance is required must quash or modify a subpoena that:

- (i) fails to allow a reasonable time to comply;
- (ii) requires a person to comply beyond the geographical limits specified in Rule 45(c);
- (iii) requires disclosure of privileged or other protected matter, if no exception or waiver applies; or
- (iv) subjects a person to undue burden.

(B) When Permitted. To protect a person subject to or affected by a subpoena, the court for the district where compliance is required may, on motion, quash or modify the subpoena if it requires:

(i) disclosing a trade secret or other confidential research, development, or commercial information; or

(ii) disclosing an unretained expert's opinion or information that does not describe specific occurrences in dispute and results from the expert's study that was not requested by a party.

(C) Specifying Conditions as an Alternative. In the circumstances described in Rule 45(d)(3)(B), the court may, instead of quashing or modifying a subpoena, order appearance or production under specified conditions if the serving party:

- (i) shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship; and
- (ii) ensures that the subpoenaed person will be reasonably compensated.

(e) Duties in Responding to a Subpoena.

(1) Producing Documents or Electronically Stored Information. These procedures apply to producing documents or electronically stored information:

(A) Documents. A person responding to a subpoena to produce documents must produce them as they are kept in the ordinary course of business or must organize and label them to correspond to the categories in the demand.

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(C) Electronically Stored Information Produced in Only One Form. The person responding need not produce the same electronically stored information in more than one form.

(D) Inaccessible Electronically Stored Information. The person responding need not provide discovery of electronically stored information from sources that the person identifies as not reasonably accessible because of undue burden or cost. On motion to compel discovery or for a protective order, the person responding must show that the information is not reasonably accessible because of undue burden or cost. If that showing is made, the court may nonetheless order discovery from such sources if the requesting party shows good cause, considering the limitations of Rule 26(b)(2)(C). The court may specify conditions for the discovery.

(2) Claiming Privilege or Protection.

(A) Information Withheld. A person withholding subpoenaed information under a claim that it is privileged or subject to protection as trial-preparation material must:

- (i) expressly make the claim; and
- (ii) describe the nature of the withheld documents, communications, or tangible things in a manner that, without revealing information itself privileged or protected, will enable the parties to assess the claim.

(B) Information Produced. If information produced in response to a subpoena is subject to a claim of privilege or of protection as trial-preparation material, the person making the claim may notify any party that received the information of the claim and the basis for it. After being notified, a party must promptly return, sequester, or destroy the specified information and any copies it has; must not use or disclose the information until the claim is resolved; must take reasonable steps to retrieve the information if the party disclosed it before being notified; and may promptly present the information under seal to the court for the district where compliance is required for a determination of the claim. The person who produced the information must preserve the information until the claim is resolved.

(g) Contempt.

The court for the district where compliance is required—and also, after a motion is transferred, the issuing court—may hold in contempt a person who, having been served, fails without adequate excuse to obey the subpoena or an order related to it.

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK**

**UNITED STATES COMMODITY FUTURES
TRADING COMMISSION,**

Plaintiff,

v.

**DONALD R. WILSON AND DRW
INVESTMENTS, LLC,**

Defendants.

13-7884 (AT/KF)

CERTIFICATE OF SERVICE

I hereby certify that on August 20, 2015, service of the foregoing subpoenas was made on the following via UPS Overnight, with a courtesy copy sent via e-mail:

Michael S. Kim, Esq.
Jonathan Cogan, Esq.
Jason Manning, Esq.
Melanie L. Oxhorn, Esq.
Kelly Karneeb, Esq.
Kobre & Kim LLP
800 Third Avenue
New York, New York 10022

Attorneys for Defendants

Andrew C. Lourie, Esq.
1919 M Street, N.W.
Kobre & Kim LLP
Washington, DC 20036

Attorney for Defendants

/s/ Sophia Siddiqui
Sophia Siddiqui

EXHIBIT

9-2-15 KB

AO 88A (Rev. 12/13) Subpoena to Testify at a Deposition in a Civil Action

UNITED STATES DISTRICT COURT

for the

Southern District of New York

U.S. Commodity Futures Trading Commission

Plaintiff

v.

Donald R. Wilson, Jr. and DRW Investments, LLC

Defendant

Civil Action No. 13-cv-7884

SUBPOENA TO TESTIFY AT A DEPOSITION IN A CIVIL ACTION

To:

Jeffrey H. Harris c/o Kobre & Kim LLP
 800 Third Avenue, New York, NY 10022
 (Name of person to whom this subpoena is directed)

☒ **Testimony:** **YOU ARE COMMANDED** to appear at the time, date, and place set forth below to testify at a deposition to be taken in this civil action. If you are an organization, you must designate one or more officers, directors, or managing agents, or designate other persons who consent to testify on your behalf about the following matters, or those set forth in an attachment:

Place: U.S. Commodity Futures Trading Commission
 Three Lafayette Centre, 1155 21st Street, N.W.
 Washington, D.C. 20581

Date and Time:

09/02/2015 10:00 am

The deposition will be recorded by this method: Stenographic and Videotape

☐ **Production:** You, or your representatives, must also bring with you to the deposition the following documents, electronically stored information, or objects, and must permit inspection, copying, testing, or sampling of the material:

The following provisions of Fed. R. Civ. P. 45 are attached – Rule 45(c), relating to the place of compliance; Rule 45(d), relating to your protection as a person subject to a subpoena; and Rule 45(e) and (g), relating to your duty to respond to this subpoena and the potential consequences of not doing so.

Date: 08/20/2015

CLERK OF COURT

OR

Signature of Clerk or Deputy Clerk

Sophia Siddiqui
 Attorney's signature

The name, address, e-mail address, and telephone number of the attorney representing (name of party)

U.S. Commodity Futures Trading Commission, who issues or requests this subpoena, are:

Sophia Siddiqui, Esq., U.S. Commodity Futures Trading Commission, 1155 21st Street, N.W., Washington, D.C. 20581, (202) 418-6774, ssiddiqui@cftc.gov

Notice to the person who issues or requests this subpoena

If this subpoena commands the production of documents, electronically stored information, or tangible things, a notice and a copy of the subpoena must be served on each party in this case before it is served on the person to whom it is directed. Fed. R. Civ. P. 45(a)(4).

AO 88A (Rev. 12/13) Subpoena to Testify at a Deposition in a Civil Action (Page 2)

Civil Action No. 13-cv-7884

PROOF OF SERVICE

(This section should not be filed with the court unless required by Fed. R. Civ. P. 45.)

I received this subpoena for (name of individual and title, if any) Jeffrey H. Harris
on (date) _____.

☒ I served the subpoena by delivering a copy to the named individual as follows: Jeffrey H. Harris
c/o Kobre & Kim LLP 800 Third Avenue, New York, NY 10022
_____ on (date) 08/20/2015 ; or

☐ I returned the subpoena unexecuted because: _____
_____.

Unless the subpoena was issued on behalf of the United States, or one of its officers or agents, I have also
tendered to the witness the fees for one day's attendance, and the mileage allowed by law, in the amount of
\$ _____.

My fees are \$ _____ for travel and \$ _____ for services, for a total of \$ 0.00.

I declare under penalty of perjury that this information is true.

Date: 08/20/2015



Server's signature

Sophia Siddiqui, Esq.

Printed name and title

U.S. Commodity Futures Trading Commission
1155 21st Street, N.W.
Washington, D.C. 20581

Server's address

Additional information regarding attempted service, etc.:

Federal Rule of Civil Procedure 45 (c), (d), (e), and (g) (Effective 12/1/13)**(c) Place of Compliance.**

(1) For a Trial, Hearing, or Deposition. A subpoena may command a person to attend a trial, hearing, or deposition only as follows:

- (A) within 100 miles of where the person resides, is employed, or regularly transacts business in person; or
- (B) within the state where the person resides, is employed, or regularly transacts business in person, if the person
 - (i) is a party or a party's officer; or
 - (ii) is commanded to attend a trial and would not incur substantial expense.

(2) For Other Discovery. A subpoena may command:

- (A) production of documents, electronically stored information, or tangible things at a place within 100 miles of where the person resides, is employed, or regularly transacts business in person; and
- (B) inspection of premises at the premises to be inspected.

(d) Protecting a Person Subject to a Subpoena; Enforcement.

(1) Avoiding Undue Burden or Expense; Sanctions. A party or attorney responsible for issuing and serving a subpoena must take reasonable steps to avoid imposing undue burden or expense on a person subject to the subpoena. The court for the district where compliance is required must enforce this duty and impose an appropriate sanction—which may include lost earnings and reasonable attorney's fees—on a party or attorney who fails to comply.

(2) Command to Produce Materials or Permit Inspection.

(A) Appearance Not Required. A person commanded to produce documents, electronically stored information, or tangible things, or to permit the inspection of premises, need not appear in person at the place of production or inspection unless also commanded to appear for a deposition, hearing, or trial.

(B) Objections. A person commanded to produce documents or tangible things or to permit inspection may serve on the party or attorney designated in the subpoena a written objection to inspecting, copying, testing, or sampling any or all of the materials or to inspecting the premises—or to producing electronically stored information in the form or forms requested. The objection must be served before the earlier of the time specified for compliance or 14 days after the subpoena is served. If an objection is made, the following rules apply:

- (i) At any time, on notice to the commanded person, the serving party may move the court for the district where compliance is required for an order compelling production or inspection.
- (ii) These acts may be required only as directed in the order, and the order must protect a person who is neither a party nor a party's officer from significant expense resulting from compliance.

(3) Quashing or Modifying a Subpoena.

(A) When Required. On timely motion, the court for the district where compliance is required must quash or modify a subpoena that:

- (i) fails to allow a reasonable time to comply;
- (ii) requires a person to comply beyond the geographical limits specified in Rule 45(c);
- (iii) requires disclosure of privileged or other protected matter, if no exception or waiver applies; or
- (iv) subjects a person to undue burden.

(B) When Permitted. To protect a person subject to or affected by a subpoena, the court for the district where compliance is required may, on motion, quash or modify the subpoena if it requires:

- (i) disclosing a trade secret or other confidential research, development, or commercial information; or

- (ii) disclosing an unretained expert's opinion or information that does not describe specific occurrences in dispute and results from the expert's study that was not requested by a party.

(C) Specifying Conditions as an Alternative. In the circumstances described in Rule 45(d)(3)(B), the court may, instead of quashing or modifying a subpoena, order appearance or production under specified conditions if the serving party:

- (i) shows a substantial need for the testimony or material that cannot be otherwise met without undue hardship; and
- (ii) ensures that the subpoenaed person will be reasonably compensated.

(e) Duties in Responding to a Subpoena.

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